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Those who are making an earnest endeavor to economize fuel, prevent smoke and lessen the spark losses should not neglect the brick arch. It is the simplest, easiest and most effective means of accomplishing these results, and yet it has been almost, if not entirely, discarded on many lines. Mr. Walsh's topical discussion of the subject showed that the brick cost only $3 per engine, and the arch would save an equivalent value in fuel in a single trip. The arches can be so maintained as to last six weeks for a set of brick. The arch pipes improve the circulation of the water in the firebox to such an extent that they prevent cracked side sheets. Brick arches are now used on all locomotives on the Lake Shore, including switching engines and a great advantage has been found in the use of small bricks which are only long enough to extend from one arch tube to the other. Mr. Manchester reported that they had used brick arches on the St. Paul for twenty years and regarded it as a regular standard practice on that line. The quality of the fire brick should receive more attention than it has in the past. The fire clay should be of such a character as to produce a tough brick and it need not necessarily have the high refractory qualities as the bricks used for metallurgical furnaces. The temperature of the flame in the locomotive firebox is much lower than that in steel furnaces. The discussion on the brick arch brief as it was, we believe, will be found of more direct value to the railways than the longer and more general one on fuel economy.

Twenty years ago the M. C. B. convention was held at Saratoga, and Wm. McWood was president. The membership then consisted of 140 active, 93 representative and 5 associate members, a total of 238. The report of the secretary for 1908 showed the membership as follows: Active, 424; representative, 275; associate, 13, and life members, 14; total, 726. The number of cars represented in 1888 was 755,743 and in 1908 the number was 2,283,330. The total membership has nearly doubled in 20 years, and the number of cars represented is now over three times that in 1888. At the convention in 1889 M. N. Forney, who had been secretary of the association since 1882, resigned, and the work of that office was taken up by J. W. Cloud. In presenting his last report Mr. Forney naturally referred to the great progress which had been made by the association since the adoption of representative membership and the new constitution in October, 1882. The report gives an excellent account of the manner in which those important changes were brought about, and reveals the masterly work of Mr. Forney in leading those who carried out that reform in the face of a determined opposition. This history is particularly interesting at the present time when another revision of the constitution is contemplated, which also has reference to the conditions of membership. At the convention in 1889 a report was presented with a drawing giving proposed dimensions for a standard 60,000 lb. axle, including the distance 6 ft. 3 in. center to center of journal. This dimension was the subject of a long discussion, as one large railway system had adopted a greater length and used a large number of the axles, but the axle with a length as recommended was subsequently adopted by letter ballot. Other important reports presented at the convention included one on standard gear for air brake cars, which presented the results of extensive tests of iron and wood brake beams and the data which was necessary for the standard specifications covering No. 1 and No. 2, which have been of so much use ever since in the purchase of brake beams. This report was made by E. B. Wall and G. W. Rhodes. The proper size of the automatic coupler was this early a subject for discussion, and a report made specific recommendations for standard size of neck of coupler to be 5 in. square, and two lengths, one 30 in. and one 28 in., the first to be used on all new cars. This convention was the first one at which a communication was received from Edward A. Moseley, secretary of the Interstate Commerce Commission, and in it he asks if Federal legislation be expedient and whether Federal inspection of cars should be attempted; and there was discussion of the question of Federal regulation of safety appliances on railways. In view of the subsequent development of these subjects and their effect upon the railways and the M. C. B. Association, the date of the original suggestion and the manner in which it was presented are important facts in the history of railway legislation.

THE INCREASING USE OF PLATE GLASS IN PASSENGER CARS.

Little notice has been taken of the change which is gradually being made in railway practice in regard to the quality of the glass used for coach windows. The general practice heretofore has been to use sheet or blown glass about ⅛ inch thick while at present there is an increasing use of plate glass for this purpose.

The Pullman Company has always used $\frac{3}{16}$ inch plate glass for its sleepers. The Milwaukee & St. Paul has since 1900 specified plate glass for all coaches and chair cars purchased, and that used for repairs of the same. The Burlington has specified plate glass for the new passenger equipment ordered this year. The difference in the cost per coach with double sash is $100 to $125. The same change is found in the recent practice of a number of other railways. There are two principal reasons for substituting plate glass for sheet glass, the first, because it is more elegant and in keeping with the high tone and handsome finish of modern coaches; second, because when the cost of repairs is considered the total expense to the railways is not very different for the two grades of glass. To make these reasons clear it may be well to explain more at length how these grades differ in the process of manufacture and in quality.

Sheet glass, otherwise known as cylinder, blown, or double thick window glass, is in the course of manufacture blown in the form of a long cylinder, which is split lengthwise on one side and flattened.

The result is the sheets are more or less bowed and the surface very uneven. This bow causes a strain in the sheet

when it is glazed which often results in breakage when the car receives a blow, due to its uneven thickness, and the process of manufacture and lack of annealing the sheet glass is not as strong in general texture as plate glass and much breakage of sheet glass is due to this lack of strength and irregular thickness.

Another defect of sheet glass is the lack of transparency and perfect transmission of length due to its irregular thickness, air bubbles and other similar defects and lack of a smooth plane surface. All this results in a distortion of vision. The view of scenery (which is so often the very object of railway travel) is disturbed and distorted and rendered uncomfortable for the passenger.

The view of the car with sheet glass windows from the exterior is correspondingly cheap and common no matter how handsomely it is painted, for the wavy appearance of the glass detracts from the beauty of the car just as it does when used in place of plate glass in a house.

Plate glass is an entirely different material, both in process of manufacture, strength and appearance.

It is first cast, rolled and then ground to a uniform thickness, and perfectly true surface, after which it is highly polished. This results in a product which is strong and permits of clear vision. It can be evenly bedded in glazing without strain, and due to this and its greater strength and thickness it is seldom broken without a direct blow, and the saving in this respect will about make up for its additional first cost.

Polished plate glass is thus superior in every respect. It gives the coaches an elegant appearance from the outside and affords greater comfort and pleasure to the passengers who are constantly looking through it to view the landscape, and the result is almost as perfect as if no medium intervened.

It is not surprising therefore that plate glass is rapidly becoming the standard practice for all first class passenger equipment.

BRAKE SHOE FRICTION AT HIGH SPEEDS AND HIGH PRESSURES.

An examination of the reports of the committee on Tests of Brake Shoes as they appear from year to year discloses the fact that our knowledge of brake shoe friction is confined principally to rather narrow limits of speeds and pressures, and the large body of data relating to the coefficient of friction teaches little or nothing in regard to the changes in that coefficient when the conditions of high speed express service are reached.

These reports also give the impression that while the modern brake shoe is stronger and more economical in producing less scrap and less wear, by the use of hard steel inserts, yet the efficiency of the shoe in producing friction for retarding the rotation of the wheels has not been materially improved. In other words, brake shoe friction has been changed very little by the various and numerous improvements which have been made in the quality of the iron and steel which compose the shoes, and the principal gain has been in the reduction of wear on it and increase in its life.

The work done by brake shoes under different conditions of train service may be compared by taking account of the weight of car, the initial speed and the time in which the stop is made. For ordinary passenger train service the brake shoes give a performance of 12 to 15 foot tons of work per brake shoe per second. To stop a Pullman car weighing 160,000 lbs. from a speed of 75 m.p.h. in 35 seconds requires 35.8 foot tons per brake shoe per second. The principal reason why the stop cannot be made in a shorter time is because the coefficient of friction of the brake shoe is so low at the higher speeds, and during half the length of stop, or about 1,200 ft. the speed is above 60 miles per hour. The combination of heavy pressure and high velocity heats up the brake shoe to the melting point at the rubbing surface. The coefficient of friction is then very low, probably below 5 per cent, or only one-fifth that under ordinary conditions of freight service and the rate of retardation from the high speed comparatively low. This is the weak point in the whole system of brake mechanism for high speed trains. The triple valve and the engineer's valve which govern the application of pressure to the brake shoe have been wonderfully improved, but the higher pressure obtained by these improvements cannot be utilized on account of the limitations of brake shoe metal.

While the brake shoe manufacturers have shown considerable enterprise in the employment of chemists and engineers in the application of science to their process of manufacture, yet it must be conceded that the air brake mechanism as recently improved is so far beyond the capacity of present brake shoes that it calls for greater effort on the part of the brake shoe maker in producing something more efficient and especially adapted to high speeds and high pressures.

A cursory study of the subject would suggest that some improvements could be made by increasing the melting point of the metal. The great changes which have been made in modern tool steel have to do largely with progressive increases in the melting point of the steel. It is true this has been accomplished by the use of rather expensive alloys which would be prohibitive for use in commercial brake shoes. No doubt an effective increase in the melting point can be obtained by the use of cheaper alloys and a commercial shoe produced in this way for special use on high speed trains. It would be an interesting experiment also to make tests with brake shoes having maximum melting point, even if necessary to use the more expensive alloys for the purpose of finding what possible improvements can be made in brake shoe efficiency by such methods.

The "Brake Shoe Test" committee has done useful work in the past, but its subject and instructions are confined to narrow limits. At present its duties are largely restricted to the tests of freight brake shoes sent in for investigation. If a standing committee on Brake Shoes is to be continued its duties should be extended to the investigation of the requirements of modern passenger service and the possible improvements in brake shoes for high speed conditions.

THE REQUIREMENTS OF MODERN BRAKE EQUIPMENTS.

The operation of the new Westinghouse brake equipment for passenger and freight service, as shown by the exhaustive tests on the Southern Pacific, was fully described in a series of articles commencing in our issue of December 4, 1908, page 1477. The manner in which this new brake has been developed is explained, and past and present operating conditions are reviewed in detail in the paper presented at the meeting of the New York Railroad Club, April 16, 1909, by W. V. Turner and S. W. Dudley. This paper makes a pamphlet of 170 closely-printed pages, and contains numerous drawings of the brake equipment and diagrams showing the results of the tests, which have demonstrated its superiority to the standard brakes now in general use in this country.

The change in the general conditions of train operation in recent years has reduced brake efficiency more than is realized by those who do not make a special study of the subject. It is fortunate that the brake designer and manufacturer does realize this and that the new brake equipment makes it possible to handle heavy trains at high speeds with smoothness and safety. The effect of the increased weight of cars and of higher speeds is such that the brake expert is to be congratulated if he can produce a mechanism which will stop trains in about the same distance they could be stopped 40 years ago. The wonderful development of the art of braking trains since then is shown in a striking manner by some figures which we find in this paper. The pressure in the 6-in. cylinder of that early period was 1,700 lbs., while the 18-in. brake cylinder used on the heaviest passenger cars now exerts a maximum pressure of 23,625 lbs.

The work required per square inch of brakeshoe surface is now vastly greater, and can best be measured by the foot-tons per brake shoe per second obtained in various tests. In the Westinghouse Galton tests the four-wheel test car weighed 18,200 lbs. and was fitted with two shoes per wheel. From a speed of 52 m.p.h. a stop was made with the car alone in 11½ seconds, and the work was done about 9-ft. per brake shoe per second. In 1875 the Pennsylvania Railroad coach with four-wheel trucks weighed 40,000 lbs. To stop it from 52 m.p.h. in 18 seconds required 12.33 foot-tons of work per shoe per second. This may be compared with maximum present requirements with a Pullman car weighing 160,000 lbs. with six-wheel trucks. From a speed of 52 m.p.h. the stop could be made in 18 seconds and the work done would be 33.5 foot-tons per shoe per second. From a speed of 75 m.p.h. the best stop with modern brake equipment with the same car would require 35 seconds, and 35.8 foot-tons per shoe per second. To make the stop in 18 seconds would require 69.6 foot-tons of work per brake shoe per second or about 5.6 times that required by the Pennsylvania Railroad coach of 1875 at its speed of 52 m.p.h. The difference in the air supply is indicated by the fact that not so long ago 25 to 30 cubic feet were required for a full application of the brake and now 300 cu. ft. are required. The 6-in. air pump of an early day had a capacity of 15 cu. ft. per minute, while the modern cross compound compressors have a capacity of 125 cu. ft.

The effect of increased weight of train in decreasing brake efficiency is shown by the fact that if one train weighs twice as much as another, both having the same number of wheels, the heavier train will run one-third farther than the lighter, if the same percentage of brake power is used in each case. The requirements of the modern brake, in order to keep pace with increased train weights, is indicated by the following example: In 1875 a passenger train braked at 82 per cent. was stopped from a speed of 52 m.p.h. in 1,000 ft. In 1907 a train braked at 150 per cent. and running at 57 m.p.h. was stopped in 954 ft., requiring about 70 per cent. more braking power, the difference being only in weight of train.

The development of the new brake equipment has been in the direction of greater power and greater flexibility, and, as the paper states, it is truly remarkable that through all improvements subsequent to the automatic brake not one of the original functions of the triple valve has been discarded or improved upon.

The new fixtures for the locomotive, known as the E. T. equipment, include a brake valve with very large ports which increased train length and larger auxiliary reservoirs have made necessary. This equipment permits the brake on the locomotive to be used entirely independent of the train brakes, or in conjunction with them, and the train brake can be applied without applying the locomotive brake. The locomotive brake can be released independent of the train brake and this has many advantages. If the drivers should slide the pressure can be instantly released from the cylinders. In grade work if the tires become overheated the driver brakes can be cut out or released. Again, the engine brakes and train brakes may be used alternately and the train reservoirs recharged. With engine brakes on and train brakes released the slack is bunched until the release is smoothly accomplished. This is of the greatest importance in handling a long freight train, as it prevents the retardation, which is still taking place at the end of the train, from pulling it in two after the head train brakes have been released. It is also a valuable feature in passenger service, as the engineer can release his train brakes and graduate the locomotive brake off just as the stop is completed, thus making an accurate stop without shock. The particular feature that has added to the flexibility of the engine equipment is the partition in the reservoir which divides it into two parts, one a large pressure chamber and the other a smaller compartment known as the application chamber. The entire control of the locomotive brake is governed by the movement of the piston which operates the supply and exhaust valves. The distributing valve is so arranged that brake cylinder pressure always acts on one side of the piston, while the application chamber on the other side is subject to various degrees of pressure according to the manipulation of the brakes.

The new passenger brake equipment was developed after the Absecon tests on the West New Jersey & Seashore, when, in order to meet high speed conditions with heavy cars, it was found necessary to limit the leverage ratio 9 to 1; to base the braking power on the service brake cylinder pressure actually obtained, and to use a reservoir capacity bearing the same proportion to the brake cylinder volume as in the original brake design. This led to the use of an additional emergency reservoir, which not only properly supplied the large brake cylinders but gave an increased emergency brake cylinder pressure. This reservoir is also used during service applications to perform other functions, such as to furnish a practically unlimited air supply, for obtaining a quick recharge of auxiliary reservoirs, and it permits of a graduated release, something which was previously impossible with an automatic brake system and characteristic of straight air and vacuum brakes only. The possibility of depleting the auxiliary reservoirs, or failure to recharge them, was one of the weakest elements in the automatic brake system, and has been entirely eliminated now by the addition of the emergency reservoir.

Perhaps the most interesting part of the paper relates to brake shoe friction and wheel sliding, in connection with the high speed braking of heavy passenger trains, and here we find an explanation of conditions which are comparatively new and certainly not generally understood even by those who are directly in charge of the equipment, because they are complicated in the extreme and ordinary explanation borders on the hypothesis. The brake shoe itself now acts as a high speed reducing valve, owing to the increased amount of work it has to perform, and the coefficient of friction is not so high and does not increase to the same degree as the speed reduces. Tests have been made with the new brake in which the nominal brake power was 150 per cent. constantly maintained for all speeds until the end of the stop without flattening wheels. With a rail adhesion of 25 per cent. and a coefficient of brake shoe friction of 7 per cent. (which is high for present maximum speeds, materials and weights), nominal 150 per cent. braking power will give a retarding force of only 10½ per cent. of the weight of the car. This is far short of being equal to the adhesion of the wheel and rail which is the compelling condition of wheel rotation, and the onward motion of the car.

The new light on the subject and experience with the new brake, indicate that wheel sliding is caused primarily by unequal brake power, which permits of the highest braked cars being jerked or pushed off their bearing on the rail by the lower braked cars. Most wheel sliding takes place with the low braking powers of service application and not with the high braking power of emergency application.

The improvements in brakes for freight trains, in addition to those for the engine already mentioned, relate principally to the K Triple. Its introduction has resulted in the application of brakes in service without shock or break-in-two under conditions not previously possible, and the saving in damage to lading is very large. Brakes can now be released without shock with corresponding benefits. One of the principal advantages of the new freight brake is the large increase in tonnage which can be handled down heavy grades with greater safety than hitherto possible. A number of tests which demonstrated this advantage are described in detail in the record of the experiments on the Southern Pacific already referred to. Other tests with the new freight equipment have been made on the Denver & Rio Grande and

the Colorado Midland, where the grade conditions are exceedingly difficult and where the tonnage was doubled and safety greatly increased. More recent tests have been made on the Raton mountain grades of the Santa Fe with equally beneficial results. All these demonstrations make it plain that there is no other device which will make so large a return on the comparatively small investment as the equipment of freight trains with the new brake, not only because it makes possible the handling of increased tonnage, but because of the saving due to reduction in car repairs and damage to lading. It has also been shown that under present conditions in this country, something better than the standard brake is essential to satisfactory and safe operation of passenger trains, and this is provided in the new brake fixtures whose development is so opportune.

SUPPLYMEN'S ANNUAL MEETING.

The annual meeting of the Railway Supply Manufacturers' Association was held in the meeting hall on the pier at 11 o'clock Saturday morning. President Turner presided.

The minutes of the last annual meeting were read and approved and a motion to change the fiscal year ending to September 30 was referred to a committee to be named by President Turner, with instructions that the committee review the entire constitution and report at the next annual meeting. The reports of the district meetings, recorded in the *Daily Railroad Age Gazette*, June 19 (page 1380), were read.

Badges were presented to the following retired chairmen: Harry W. Frost, chairman, 1900-01; Fred. A. Casey, chairman, 1901-02; Scott H. Blewett, chairman, 1902-03; George A. Post, chairman, 1903-04; Charles W. Martin, Jr. (deceased), chairman, 1904-05; F. K. Shults, chairman, 1905-06, and Mark A. Ross, chairman, 1906-07. The badge engraved for Mr. Martin is to be given to Mrs. Martin.

The following officers were elected to serve for the ensuing year:

President—Edward M. Grove, McConway & Torley Company, Pittsburgh.

Vice-President—L. R. Phillips, National Tube Company, Chicago.

Treasurer—Thomas Aldcorn, Chicago Pneumatic Tool Company, New York City.

A vote of thanks was tendered to Mr. Turner for the efficient way in which he had conducted the affairs of the association.

The meeting was brought to a close after Mr. Whipple, chairman of the Badge Committee, had presented Mr. Turner with a gold badge.

HUGHIE M.

I've been asked to write a letter,
Hughie M., Hughie M.;
But I think I can do better,
Hughie M.
If I wrote but half I know,
No one else would have a show;
That would not be square, you know,
Hughie M., Hughie M.

If I put my thought in meter,
Hughie M., Hughie M.,
It may make the thing completer,
Hughie M.
For you know my "Daily" stunt
Was for rhymes and jokes to hunt,
Or to boost some little runt,
Hughie M., Hughie M.

Now, the thing that touched me then,
Hughie M., Hughie M.,
And which comes to me again,
Hughie M.
Was that every bit of guff,
Even though 'twas in the rough,
Brought the welcome words, "Great Stuff,"
Hughie M., Hughie M.

So, I'll think my task is finished,
Hughie M., Hughie M.,
If your pleasure's not diminished,
Hughie M.
That I add to this ovation
But four words of approbation—
"It's great stuff—appreciation!"
Hughie M., Hughie M.

F. W. LANE.

Edward M. Grove,
President.

L. R. Phillips,
Vice-President.

Thomas Aldcorn
Treasurer.

Newly Elected Officers of the Railway Supply Manufacturers' Asscciation.

YALE MEN AT THE CONVENTIONS.

All Yale men attending the conventions are urged to register their names with Ray Morris, at the office of the *Railroad Age Gazette.*

J. W. Young, chief signal inspector, and Francis E. Driscoll, of the purchasing department of the Erie, was seen on Saturday last making a tour of the exhibits with Kerite Miller.

DINNER TO HUGH M. WILSON.

No more deserved tribute was ever paid to a living man than was paid to Hugh M. Wilson at the dinner given in his honor at the Chelsea Hotel in Atlantic City on Saturday night, June 19.

Speaker after speaker—all men of prominence in the railway and railway supplies business—with wit and eloquence that are rarely equaled, and in tones of sincerity and warmest affection, told of the great ability, the bluff cheerfulness in adversity, the inexhaustible patience and energy and resourcefulness, with which Mr. Wilson labored—and finally with brilliant success—to build up *The Railway Age*, where it would prosper and at the same time be a potent influence for the moral and material good of the railways and allied interests.

Hugh M. Wilson.

And every kind word, every loving word, every eulogistic word of the speakers was received by the almost 200 men that surrounded the tables, with plaudits that were as eloquent in their way as the spoken tributes were in their way, of the admiration and affection which all present felt for the guest of honor.

It was a tribute to what Mr. Wilson, a scant sixteen years ago poor and obscure, has done. It was still more a tribute to what he is—a man almost a type by himself, who can be equally admired for his energy and ability, respected for his integrity and high sense of honor and duty, and loved for his big, warm, generous heart.

It is well known to the readers of this paper that *The Railway Age*, owned by the Wilson Company, was merged to the *Railroad Gazette* on June 1, 1908, as the *Railroad Age Gazette*. Mr. Wilson came to Atlantic City in June, 1908, and had charge of the editing and publication of "The Daily." This ended his connection with railway journalism. Some of his friends suggested at that time that something ought to be done by the railway and railway supply men to show their appreciation of the years of hard, faithful, fruitful work he had done for them. On Mr. Wilson's recent return with Mrs. Wilson from eight months in Europe, the matter of giving a demonstration in his honor again was taken up, and the following General Committee, to make plans, was formed:

F. A. Delano
Daniel Willard,
W. F. Allen,
A. W. Gibbs,
F. H. Clark,
J. Alexander Brown,
George H. Bryant,
S. P. Bush,
O. H. Cutler,
Frank Dinsmore,
J. F. Deems,
Wm. McIntosh,
C. A. Schroyer,
C. A. Seley,
F. A. Barbey,
G. M. Basford,
Scott H. Blewett,
Harry W. Frost,
B. A. Hegeman, Jr.,
J. M. Hopkins,
George A. Post,
Charles Riddell,
W. M. Simpson,
Albert Waycott.

It was decided to give him a dinner at Atlantic City during the mechanical conventions this month, and the following Banquet Committee was appointed:

B. A. Hegeman, Jr., Chairman.
Harry W. Frost, Treasurer.
W. M. Simpson.
Albert Waycott.
J. Alexander Brown, Secretary.

Those invited to the dinner were also invited to send to J. Alexander Brown, Secretary, letters of appreciation of Mr. Wilson, and many hundreds were received.

Otis Cutler was toastmaster of the dinner, and talks were made by F. A. Delano, W. H. Boardman, Harry W. Frost, Robert Quayle and George A. Post.

While the dinner was being served a great deal of amusement was afforded by the receipt of a series of grapevine telegrams. If there is any one of Mr. Wilson's characteristics which stands out more prominently than any other, it is his gluttony for work. Hugh Wilson, without something to do and doing it with all his might, is a bored, chafing solecism. Before he had got aboard the ocean liner to come home, he was writing to his friends: "Somebody please get me a job quickly," and he had hardly set foot on American soil before he was chasing himself back and forth across the country looking for work and inspecting business propositions. The telegrams received during the dinner by grapevine telegraph, and delivered at short intervals by a uniformed messenger boy, who bawled loudly for "Huge" M. Wilson, indicate that he will not lack a job long unless he is uncommonly hard to suit. Mr. Cutler received the following messages regarding desirable positions that are open:

"Get Wilson's best price for publicity work. I'm losing ground. Don't let the press have this.—TEDDY ROOSEVELT."

"Am considering appointing a caddy. How will Hugh Wilson do for the job?—WILLIAM H. TAFT."

The following proposition came to Mr. Wilson by cable from Paris:

"Am getting old. Will you take my job at $500,000 per year?—HARRIMAN."

Other messages received by Mr. Wilson tendering jobs were the following:

"What will you take as publicity manager?—WRIGHT BROS."

"Have found a saloon I can't break into. Send Hugh Wilson and Harry Frost to help me.—CARRIE NATION."

"Assuming your acceptance of any offer we might make, proceed at once to Washington and report whether Congress will do its duty by the country or do its country by the duty. —N. Y. EVENING POST."

Among the other telegrams received by Mr. Wilson, were the following:

"Never mind, old man; we shall be heard from again in 1912.—WILLIAM JENNINGS BRYAN."

"If you drink nothing but water to-night I will change my name for yours.—CARRIE NATION."

The following were received by Mr. Cutler:

"Tell Hugh not to accept a house no matter what they say.—DEWEY."

"Now that Wilson is out I shall be able to get my advertising write-ups in the *Railroad Age Gazette*. Please arrange. —LYDIA E. PINKHAM."

"What do you know about Wilson? He is trying to brake in.—ST. PETER."

Mr. Cutler proved to be a fine toastmaster. He interspersed the formal addresses with sparkles of wit—some of them, it is to be apprehended, premeditated—which kept the crowd in a constant state of merriment.

The first speaker was Mr. Delano. He had been assigned the subject, "Railroads and the Railroad Press." He spoke extemporaneously. He said that he had been told that nothing serious was to be said at this dinner, and therefore did not intend to be serious. A friend of Mr. Wilson's of many years, he paid warm and witty tribute both to the man and to his work. In concluding he referred to the relations of the railways to the press, and told a story about Eugene Field to illustrate the attitude of the former toward the latter. According to this story, after Field had lived in Chicago a good many years he returned to St. Joe, Mo., his old home, to have a good time with those who had been his associates when he was engaged in daily newspaper work in that good old Missouri town. As was apt to be his custom on festive occasions, he got before night into a condition, in which, as the saying is, "his feet would not track." His friends, who apparently had succeeded better in staying sober, bundled him into a cab, took him to a train for Chicago, put him to bed in a berth, slipped $1.00 into the hand of the porter and requested that he take good care of Mr. Field and be sure to put him off the train at Chicago. The next morning the Senegambian, bearing in mind the dollar, touched him gently instead of shaking him rudely, as is apt to be the way of Pullman car Senegambians, and told him that the train was pulling into Chicago and asked if there was anything he could do for him. Field turned wearily over in bed and said: "All that I want is a drink of cold water and a kind word." Mr. Delano said that all the railways ask from the press is a drink of cold water and a kind word.

"The Railroad Press and the Railroads" was responded to by Mr. W. H. Boardman. Mr. Boardman spoke as follows:

Mr. Boardman's Talk.

There are few of the older railway editors left. Perhaps I am the oldest of all. When the news of the death of the great Edwin Booth was told to the great John L. Sullivan, John said: "It's too—too bad—there's dinged few of us left."

The railway press and its attitude toward the railways has passed three phases. The last one is nearly like the first one, but the middle one was different. The first idea was somewhat non-commercial; it proposed to treat the subject purely scientifically and see how it turned out. But it is true, so far as I know, that not one of these undertakings was ever carried through on the scheme of its founders. Most of them failed and those who stayed changed entirely. They felt their way and by experiment either found or lost a way of being of service, but experience is a dear teacher. There is a Kleptic proverb, whose translation is something like this: "Experience teaches to-morrow what one needed to have known yesterday." Alexander Brown, who read this proverb in the translation, not in the original, says of it that, "if a man does business that way it's a good while before he's worth a damn."

The *Railroad Journal* began in the early thirties—it was a corking good magazine and so also was the *American Engineer*, started later by Zerah Colburn, a real mechanical genius, who wrote a great book, "Locomotive Engineering and the Mechanism of Railways." These papers were in one sense too good; that is, adhered too consistently to the theory of their founders. They did not pay and the *Railroad Journal* died several times. Their heads drifted into Van Arsdale's comfortable lap, there to remain good and never die any more than Van would die. He won't die because he's got the Christian Science. Van traveled on free passes all his life until the Interstate Commerce law stopped him. This pained him severely—he took it hard and on one short trip he shied the conductor; later, however, he sent $2 in this letter to the passenger agent: "I stole a ride, but now I have got the science and I feel like hell. I now enclose $2 for it."

There is not a man in this room but would find delight in reading parts of the early volumes of these honest railway magazines. They have more detailed facts than the railways like to give out nowadays; for example, there is a wonderful report of Richard P. Morgan, engineer of the New York & Albany Railroad, which is now the Harlem division of the New York Central, and in it he lists every item of cost of the graduation and masonry throughout the line. It foots up an average of $9,200 a mile, but it is the details that are interesting and valuable. Locomotive work and costs of operation were fully reported in the *Journal* and must have been a great help to the pioneers. By 1840 Baldwin, Vail & Hufty had built 140 locomotives and their class three heavy engine weighed 20,250 lbs.—less than one twentieth the weight of one of the new Baldwin twins. One of these early locomotives is reported to have shocked the little railway world by hauling a train with a gross weight of 85 tons on the Boston & Providence road.

There first appeared in the *Railroad Journal* the bold prophecy that railways were destined ultimately to supersede canals. Rate-making principles and practice were developed in long articles that would appal Professor Ripley and make the Standard Oil Company, like Warren Hastings, stand amazed at its own moderation.

These early publications contained almost no editorials and this is the main difference between the first and third phases of railway journalism. Hugh Wilson used to think that editorials were good stuff until he began to write them himself and learned to agree with the rest of us that these writings

are mainly valuable as training for the man who writes them and are more or less confidential between him and the proof-reader. Of course, this is carrying it a little too far. The limitation is that the railway editor has quite enough to do in getting news and facts and making their lessons available. He must not preach, and when he finds that tendency irresistible it is high time to go to Mombassa and assemble a sporty congregation of thick-hided rhinoceroses and nervous lions. Indeed, there is something comparable between the spoiled editor and the great ruler who has lost his head.

When good, but dull railway journalism failed to pay, the middle-man-blood-sucker idea had a chance and I think, but don't know, that the *Railroad Gazette* was the first railway parasite of this kind. Our predecessor's idea was that railways were making money and ought to "cough up." It was not blackmail; it was less dishonorable but more shameful; it was an humble, meaching, dependent attitude toward them. The shame of it is that this was profitable, and there were many imitators. Datus Brooks, I think, started the *Railway Review* on the same plan in 1862. He was the tallest man I ever saw. They say that a while ago when Stuyvesant Fish slowly rose to speak, Mr. Harriman followed him with his beady eyes like a sextant taking his great altitude, and softly breathed: "Nearer my God to Thee; Keep A'Going."

The beginning of the change came when, about 40 years ago, Dunning, a traffic student, and Forney, whom you all have known, had an idea that with the aid of a very young civil engineer (I was the kid civil engineer) they could do good by giving officers and manufacturers all the facts and all the news and so tend to make railroading a science as well as an art. This has proved to be a delightful and useful work and plenty of others have joined in.

Angus Sinclair joined with John Hill in publishing a special railway paper. He used to hit out strong and sometimes hurt people. Now, sometimes when you hurt folks you have to do something about it. Angus' method was something like that of the lyncher; hang first and try afterward. The spokesman of a lynching party which had been working out a theory of its own, said: "Madam, we find that after all your husband was innocent and we have come to make amends. We hadn't ought to have hung him. All I can say is that it's one on us."

"Uncle John" Reynolds has always been my ideal for one branch of the business—friendly, and fair, and straight. He and I alone know how old he is. He used to take advertisement orders from my father and that's why I call him "uncle." His repartee was always sweet. Once after a ten-minute advertisement address my father said: "I am afraid you are playing on my innocence." "Perhaps I have been trying to play on your innocence, but it's such a very, very little instrument that I don't seem to get a note out of it."

Aside from special student editors, such as Zerah Colburn, M. N. Forney and D. L. Barnes, in the past, and Fowler, Sinclair, Forsyth and other good men in the present, I can't help thinking that Colonel Prout was the greatest and most all-'round railway editor. He was a pioneer in giving value, power and dignity to the work. So, also and in the same class, I consider Hugh Wilson the greatest railway publisher. I shall not be carried away by the fervor of this dinner to him, in making a sober estimate of his accomplishment which has revolutionized a good many things and tended to make the railway press strong, not only in what it does for the manufacturer and the officer, but also in the newer devlopment which has made its independent and judicial studies of public relations a factor to be reckoned with in the recent years of public hostility to railways.

Hugh Wilson did not come like a young Lochinvar out of the West. He oozed up in the Middle West and his usefulness spread gently and sweetly all the way to the Gulf of California and to the north of Scotland. David Cooper, General Manager of the Glasgow & South Western, said to me: "Do you know Hugh Wilson? He is your countryman; he's a great man; he must be a Scot." I don't know that he is a Scot, but I do know that his laugh was always worth a dollar and a half a minute and that he gave such a shaking up to his competitors as they never had before; that in zeal, originality and effectiveness, in strictly honorable methods and kindliness, he made his competitors love him for the slashings he gave 'em—made you and me love him for the solid foundation he laid for good work that will surely go on.

Harry W. Frost, who was associated with Mr. Wilson in the business department of the *Railway Age* during the dark, panic days of 1893 to 1898, responded to the toast "Reminiscences." He said:

Mr. Frost's Speech.

Mr. Toastmaster, the Guest, and Fellow Worms:

When the news was gently broken to me that I was to have the honor of addressing you this evening, I was told that my subject would be "How We Paid the Rent," and furthermore that the "speech" was to be humorous.

I am not creditably informed as to whether or not any of you ever paid the rent, but if you did I am sure you will agree with me that there was nothing funny about it. It is one of those processes of life, more or less necessary, that can be classified as stale, flat and unprofitable. No one ever hunts up his landlord, slaps him on the back, and with loud, unrestrained laughter hands over the check. It is much easier to move than it is to do such a thing. And, in this connection, though possibly not for this reason, it is noticeable that nearly every supply house in New York and Chicago has changed its office during the past year or eighteen months.

I am not the right person to tell you how we on the sainted *Railway Age* paid the rent. I was not interested in that transaction at all—as a transaction. My object while in the harness there was to accumulate and acquire sufficient business and money to satisfy my personal needs—and that was job enough for one poor, weak man.

If the landlord had as interesting a time to get his money as the others of us did, he certainly was entertained in a highly exciting if not satisfactory manner.

Those were great times, the times between 1892 and 1898, when I assisted in the vineyard labors on the *Age*, and Wilson sat around with not more than a thousand things to do every minute, the paying of the rent representing a part only of his holiday amusements. Some of you may remember that in May, 1893, this great old country of ours stepped on a banana peel at the top of a toboggan slide and for the next four years was doing the dirigible descent. Well, we were there, both at the top and at the bottom, and while I have no authentic information on the point, I expect the landlord was there or thereabouts, waiting for us.

I saw a bit of fugitive verse in one of the papers the other day that reminded me of some of our experiences.

> "Money talks," the sages say;
> But when we heard its dulcet tone
> It always seemed so far away
> We had to use the telephone;
> And as we waited its voice to hear
> And care brought furrows to our brow,
> Fate answered in a tone severe:
> "Ring off; the line is busy now."

I think Wilson was treasurer—I am not certain about the title, but he was *It* so far as money was concerned—of that I am sure. And the way he doled out the filthy lucre to Robinson, Ford, Lane, myself and the other boys, reminded me of the story of the Dutchman and the extravagant, spendthrift wife:

"Dot wife of mine, she runs me vild about money. Why, for two, three months, every time I come by der house she asks me for five dollars."

"But what does she do with the money?" asked the sympathizing friend.

"I don't know," said the Dutchman, "I haint give her none yit."

But, friends, Romans, countrymen, we have come to praise Wilson, not to bury him. The good he has done we intend to speak about, and the evils will be interred with his bones, thus reversing the Caesarian order of Shakespeare. Here, under leave of Brutus and the rest, come I to speak in Wilson's praise, and the revised subject handed me is "Reminiscences."

I have noted that when a man grows patriarchal, his hair becomes whitened with sitting up with Father Time, and his form becomes emaciated from the worries and trials of a busy life, he is decorated with badges of veterancy, and is called upon to tell of the winter it was so cold and to "reminisce" about people. I do not exactly belong to the class graced by Fernando Jones and General Grosvenor, but my memory runs back over several years of delightful association with the cadaver now under dissection. I could tell you of many interesting things about Wilson—but I won't do it. He is a modest man withal, and a bashful one, so I take pity on him, and so far as I am concerned the mantle of charity shall cover his more or less checkered past, as relates to him personally.

Of this work, of the things he has done, of his business daring, his enterprise, his push, his success, they are an open book into which all prying eyes may look without profanation, and about which I might talk to you by the hour had not the committee in charge very wisely put a time limit upon my speech.

The paying of the rent, in the life of Wilson when we were together in Chicago, was, as intimated before, no joke. The trials and tribulations of the newspaper business, under the best of circumstances, are not as amusing at first hand as

some people in the grand-stand seem to think. And when you attempt to galvanize into life an amalgamation of a paper that never was and another paper that was a "has been," this process of alchemy taking place in a period of depression when government bonds were not good collateral—well, that was what Wilson was up against, and I will leave it to you if it was a laughing matter.

There were, in those old days, many trials, much worry, and a deal of hard-digging, but I do not think there ever was a minute that we took our eyes from the star or abandoned hope. None in that little army was made of the stuff that gives up, and Wilson was our captain and counselor. Commodore Perry would never have had to send him a wireless message about not giving up the ship. The word "quit" was cut from all his lexicons.

The spirit of dogged determination, sweetened with happy good nature, which, too, was a part of Wilson's make-up, could not long be kept down, and needed only a revival of national sanity and fair business to bring about success. Adversity, while it is unhandy to have around, is a good school, and in those four years we mastered all the curriculum from the three R's to trigonometry. There was nothing in the line of adversity that we could not have lectured on. And when prosperity once more came around, we were ready for it—the success that hard work merits was perhaps a little slow, but it came—and it was welcomed.

Having sounded the depths, the climb to the heights commenced, and the onward and upward progress was rapid. Some way, some how, the world always likes a man that holds on and fights, and Wilson had the affection, the esteem and the respect of the world for these qualities. That is the thing in a nut-shell.

If it were to be asked the dominant characteristic of our guest of the evening, I would say that it was keeping eternally after the thing he wanted. In addition to this, he had a most sympathetic feeling toward all who came in contact with him—your business was his business, your troubles were his troubles, your success he rejoiced in, and your failures hurt him as much as they did you. You can not help cottoning to a fellow like that—you cannot help having a strong, healthy liking for him even if you knew him but casually. If you were associated with him in an intimate manner—if you had gone through the "war" with him, and seen the bright gold of his character in the crucible of trial as well as in the splendid sunlight of success, that liking would develop in you, as it did in me, a regard that can be called by no name other than affection.

Wilson, is in a way, typical of our country and of those that laid the foundations that have as yet endured. He is of the type American.

The hardihood that encouraged the discoverers to enterprises beyond the vision of success; the tenacity of purpose that marked their early struggles, and held them to their tasks through weal and woe; the eagerness with which they grasped every advantage and wove it with the woof of necessity for their ultimate good; the steady pushing forward from one goal to the goal beyond, until the gods of fortune rewarded their fortitude with success, and they enjoyed the serenity that comes with peace and plenty: these things that characterized the pioneers of the New World, from the Norseman to De Soto—from the Puritan to the 'Forty-niner, are, in a way, the mile stones and the meridian of the career of Hugh M. Wilson—a typical American.

Robert Quayle, who was the next speaker, alluded to the different qualities that had made different men great, and found that the most important and at the same time the most amiable of these qualities were a part of Mr. Wilson's nature. He spoke of the necessity of perfect organization, composed of capable, loyal men, as essential to any man's success in large affairs, and paid tribute to the men who had been Mr. Wilson's associates in building up the *Railway Age*.

Mr. Post's Remarks.

Colonel George A. Post responded to the toast "Appreciation." He said in part:

Little did I think in 1893, when my debut was made as an attendant upon these conventions in the capacity of a railway supply man, and my eyes gazed for the first time upon the cherub face of Hugh Wilson, that fate would make me a co-conspirator against his peace of mind in a mess like this. He was merely a kid then, full of hope—and a lot of other things. The only empty things about him were his pockets. As you see him now you could scarcely believe that time was when he lacked $2.80 of having a quarter. But he was apparently just as happy then as now. Those were the days when mergers were but little known, and before many of the supply men who now disport themselves upon the golf links had fattened their wads. I may say, in passing, that I haven't reached the golf stage yet.

Well, as I was about to say, before I imitated Lot's wife, and looked back a little, you cannot always tell what is going to happen in this world. I bear no malice toward Wilson. In fact, I admire him greatly. He never did anything to me that hurt me, unless it was to extract some few hundreds of dollars from me, but I have never laid that up against him. He needed the money in his business. And yet, somehow the duty has fallen to me to give him a very uncomfortable quarter of an hour. Honor bright, I hate to do this thing. By nature I am tender-hearted. It may look nice, and there is doubtless a glamor about a proceeding like this that is alluring to the observing optic. But to the fellow whose quivering carcass is placed upon the spits and toasted over the fires of affection, while a lot of folks watch the play of his features and gloat over the twitching of his agonized frame, it is easily conceivable that he should temporarily regret that he had led such a life as to expose him to such manifestations of esteem. A man can stand any amount of abuse, because he can sass back, and possibly thrash the one who hands out the tobacco syntax, but to be the helpless recipient of honeyed phrases and laudatory comment in an avalanche of hot stuff while he melts under the heat into a mere gob of gratitude; that's what makes him feel funny in the region of his zygomaticus—wherever that is—as well as other parts of his anatomy.

Article 8 of the Federal Constitution, among other things, thunders forth this declaration for the protection of American citizens: "Nor shall cruel or unusual punishment be inflicted." Under this proviso our guest of honor this evening might have confidently expected to be immune from the exquisite pains of this assault upon his emotions. But as the late Tammany politician, Tim Campbell, said to the late President Cleveland, when, as Governor of New York, Cleveland vetoed a pet bill of Campbell's upon the ground that it was unconstitutional: "What the devil is the Constitution between friends?"

This punishment may be *cruel*, but it is not *unusual*. Indeed, it is the generally accepted way among Americans for getting hunk with a man who has made himself useful and honored. There may be some other way of showing appreciation, but it hasn't been discovered, or, at least, it is not the vogue. We cannot unveil a marble monument in his honor, for Hugh Wilson isn't a "dead one." He never was, and he wouldn't know how to be. He is such a particularly live person that, even when he "passes on," as the Scientists say, there will be something doing wherever he goes.

So, under the circumstances, there was nothing else to do than to ping him with a banquet. He pleaded like a beggar for mercy, but it was coming to him, and with resolute determination we have administered to him what he deserved, and we have given it to him—in the neck. He and we will get over it. We may still feel the effects of it for a number of hours yet, but it will wear off, and then we will be so glad it's over that we'll be glad we did it.

We don't want this affair to take on any funereal aspect. We are not sorry about anything. We haven't lost anything. Neither is or has Wilson. Look at him! Are there any corrugations of sorrow in his classic brow? Does regret cast its shadow of gloom over his dial? Not much! Why, the smile that plays in utter abandon about his phiz reminds me of the look on the face of the cat in the picture, under which are printed the words: "I've eaten the canary!" No, gentlemen, this is no bee for tapping the lachrymal ducts; it is a jag of joy.

We are not here to make obeisance before some stuffed prophet, while he blinks benignly upon a bunch of idolatrous inferiors. We understand, however, that there are some profits stuffed in the jeans of the central figure of this affair, and we are glad of it. Neither are we going to lift our guest up on a pedestal and prate of his virtues and point to him as an example for the youth of the country to pattern after. That wouldn't be fair to Wilson, nor would it be safe for the aforesaid youth. This occasion isn't intended as the plot for a Sunday-school story, anyhow, although it is, in fact, a story with a moral.

Another glorious feature about this fact is that there is no farewell business in it. Our hero has come back, and we are saying: "Hello, Hugh! Bully boy!" I suppose that somewhere along in here, in order to be entirely conventional, I should assume a grave demeanor, and in priest-like tones say to the object of our ten-dollar-per capita devotions: "Well done, gay and festive brother!" but I don't happen to have any blue-prints with me showing just who was *well done*.

As we travel through this vale of tears—and some *tears*—we meet a great many unhappy mortals who miss half the joy of life for one fatal reason. They fail to see the good in the wayfarers that they meet. They are not looking for it. In fact, many of them appear to believe that they are not

really on the job unless they are making a still hunt for evidence that Smith is a bigamist, Jones a horse thief and Robinson a liar. In certain circles it is fashionable to belong to the Amalgamated Association of Knockers. There are a few professions in which you have got to discern, when contemplating others, the reasons for admiring them. If you can't see good, you can't make good, and there you are.

Amid this cluster of humans who are appearing before me this evening there are quite some few who *are*, or perhaps I should say *have been*, in the business of selling the product of the forge and lathe. A necessary part of their equipment is the art of appreciation. Now, I don't want to buy goods of a fellow that always asks me if fat old parties like me don't hate hot weather. I have indiscreetly allowed myself to make more speeches than was good for me or for the audiences upon whom they were inflicted. On one occasion an acquaintance who noted my name on a list of toasts at a banquet, said: "For God's sake, Post, are you talking again or yet?" Do you think that gazabo could separate me from any of my coin in the way of trade?

Appreciation is the queen of arts. Not flattery. Nothing is so stale, flat and unprofitable as to congratulate a man on anything which you both know he hasn't got. The art of appreciation has truth for her handmaiden. You analyze your man, and if he is worth bothering with, you'll find something and the discovery will delight you quite as much as it does him. It is an art which blesses him who appreciates and him who is appreciated.

An occasion like the present can, of course, be brought about only by the existence in some one man, of so many admirable qualities that scores and scores of his acquaintances have discovered them and have spontaneously joined together to do him honor in one large formal appreciation. That is just exactly what has happened in this Wilson case, and that is why we have pulled off this gastronomic stunt.

Sometimes when it is desired to contrive some means of conveying to a man the affectionate regard in which he is held, a gift is bestowed upon him, more or less costly and more or less beautiful. The defects of such method are several. The gift may break or tarnish; having intrinsic value, it may be stolen. Even if the recipient retains it in a glass case or a safe deposit vault, the words which were spoken at the presentation fade from the memory like echoes of a voice that is dead. Such a gift is like the figures which yonder artist on the seashore molds in the sand; the tide flows and the figures are no more.

Hugh Wilson—I will now read an appreciation which has been prepared and inscribed on parchment, and when I am done I shall call upon this company to stand and uproariously ratify the sentiment we avow this night.

"To Hugh M. Wilson:

"Inasmuch as you have retired from the Presidency and Editorship of the *Railway Age*, with which publication you were connected during a period of 18 years, a large part of that time its inspiring genius and intrepid up-builder, the hosts of friends and admirers won by you among railway men and railway supply men have desired to make some formal expression of their sentiments toward you. At this banquet spread in your honor a large and enthusiastic company have sought to show their affectionate esteem, while others in large number, unavoidably deprived of the pleasure of personal participation, have testified by letters and telegrams their high regard for your worth as a man and your inestimable service to the railway and allied interests.

"As an enduring reminder to you that your labors have their reward in the generously bestowed plaudits of those for and with whom they were performed, they have caused this appreciation to be inscribed.

"To those bearing the onerous burdens of railway operation, the *Railway Age* under your management was ever helpful in virile suggestion and candid criticism. Its columns were replete with news and views of great educational value. As a courageous, studious and intelligent champion of railway interests, you were alert to advocate their rights, valiant to defend them against unjust attack, and always keenly appreciative of their necessities.

In the wonderful work accomplished by the Master Mechanics', Master Car Builders', and Maintenance of Way Associations, you were a coadjutor vigorous in devotion and effective in co-operation. The publication of the *Daily Railway Age* during the conventions of the Master Mechanics' and Master Car Builders' Associations since 1887, requiring tremendous energy and mental fertility, has been fraught with most important results to those associations in adding dignity to their meetings and enhancing their value to the railway world by immediate and wide publicity of the discussions and conclusions. In this enterprise yours was long the master mind and controlling force.

"During the five years that you were Secretary of the Supply Men's Executive Committee in connection with these conventions, you performed herculean service, gratuitously, for that craft, and during all the years of your editorial career you were the obliging friend and steadfast ally of the supply interest, always eager to aid and encourage those who sought publicity for their inventions and products.

"Your indefatigable labors for our general welfare are appreciated. Your manifestations of kindness and helpfulness will ever be remembered. Your success, professionally and financially, delights us. Happiness for you and yours is our earnest hope. That you are a good friend, a valuable citizen, a manly man and a royal good fellow is the unanimous verdict of all who have been your associates and who have been observers of your career in the railway world.

"Done at Atlantic City, New Jersey, this nineteenth day of June, Nineteen Hundred and Nine."

Now, gentlemen, I ask you to rise to signify your approval of the sentiments just read, and when standing we will all join in singing "For He's a Jolly Good Fellow."

[A rousing ratification having ensued, Mr. Post continued]:

Now, Hugh, you have heard this formal asseveration of how we size you up. You have also heard a lot of other talk tonight that has been eloquently eulogistic. But that isn't enough. We are all business men and we want this thing done up in a businesslike manner. Therefore: Dear Sir—Confirming our conversation at Atlantic City, of June 19, 1909, we beg to hand you a memorandum in writing. [Here the framed parchment "Appreciation" was exposed.]

Inscribed on parchment, the sentiments which this night leap in our hearts and gush from our lips cannot break or tarnish. Thus do we erect a monument in your praise, my dear Hugh, which wind cannot shake nor wave level away.

Mr. Wilson's Speech.

I have had many difficult assignments in my time, but never one so hard as this. A newspaper man—reformed though he be—is always embarrassed by public plaudits. The air which he is accustomed to breathe is usually charged with criticism. The rarified atmosphere of applause is to him a thing rare indeed. That alone makes this occasion a mystery, and I believe it is more of a mystery to me than to any one else.

I know now what it means to be "in the hands of your friends." I am experiencing that condition called "extreme embarrassment." I know as never before the significance of the word humility. I can almost hear some of my particular friends in this room saying: "Thank God, if he's humble and embarrassed, that alone is worth the price of admission."

No man can be the innocent subject of such an occasion as this without feeling the greatest humility and the greatest apprehension. So far as the past is concerned, the sentiments expressed here and the things done here regarding myself are largely without justification. The facts of history do not sanction them. I am no paragon. I have done nothing to call forth such a demonstration, and I know it.

I am reminded of an incident in my newspaper work, when a railway man severely criticized an article that I had written. He said: "Your stuff is all wrong." "Well," said I, "where are we wrong? Haven't we the facts?" The whole thing is wrong," was the reply, "and I know, because I have inside information." In the present case I have inside information about myself. I know that you are wrong. I wish that I were worthy of this testimonial, but I am not.

As for the future, my predicament is even worse. In such circumstances the poor devil who would retrieve the past and, in the future, live up to the character which you have given me to-night, would have to be both a genius and a saint. As I am not a genius, and as I have no throbbing desire to be a real saint, the future looks pretty black.

I am proud of the fact that I have been a newspaper man and a publisher. I am proud of the fact that I have been connected with the railway and technical press. I am yet more proud of the friends and acquaintances which that connection has brought to me. I am inclined to think that the functions, the opportunities and the merits of the technical press are not as fully understood and appreciated as they should be. Nor is the ignorance in this respect confined to readers and patrons. Some editors and publishers are among the guilty.

One of the greatest menaces to public sanity and public morality in this country is the jaundiced irresponsibility of a large section of the daily press and of many popular magazines. Under the guise of upholding public morality they are following a policy of commercialism that is frequently conscienceless and that is always dangerous in its tendencies. A great popular journal is not now a great moral force. It is a great commercial enterprise which exploits the poorer classes of the people. As money makers, as manipulators of the public for profit, our "railway barons" and our "captains of industry" are mere babes and sucklings in comparison with

the men at the head of some of these journals of general circulation. These plutocratic publishers, these molders of public sentiment, make their money out of advertising patronage—which they can command by reason of enormous circulations. Great circulation is not always compatible with editorial decency and self-respect. These circulations are built, not upon the accuracy of what the papers print, not upon the soundness of the views they express, not upon the mental and moral healthfulness of the information they disseminate, but upon the degree to which the "human interest" of the reader is stimulated and held. The appeal to the element of human interest is the controlling factor in the business and editorial policies necessary to large circulations. It ruthlessly demands startling "stories" and picturesque distortions of facts. The truth is nothing. The interest, the thrill, the heart-beat of the reader is everything. Here is a condition that, aggravated by the complexity of modern existence and by the diversity of human knowledge, makes accuracy of statement and the setting forth of facts in their true relations impossible, and, for the purpose of the sensationalist, undesirable. Furthermore, the specialization of endeavor in all lines of business and thought renders it most difficult for even the best intentioned editor of a daily paper to do justice at all times. A writer, however, facile and quick of comprehension, must be in the atmosphere of things in order to write of them with due regard to truth and proportion. The fundamental facts underlying industrial affairs are elusive and in times of popular excitement are easily lost to sight. They are liable to be swamped in tides of popular prejudice and plausible special pleading.

Such, briefly, are the conditions out of which spring the opportunities and the grave responsibilities of the technical press. It should be the work of the technical journalist to rescue the business interests of this country from the riot of ignorance, untruth, half-truth, distortion of facts, sensationalism and crooked thinking—the whole brood of abuses that yellow journalism has introduced into the treatment of serious business affairs. The technical journal may lose much of its force; it may fail of the full performance of its duty; and it may squander its great opportunities by being too narrow in its scope. On the other hand, the readers and the patrons of these journals may make the mistake of minimizing their functions and misunderstanding their mission.

The day has gone when a technical journal can be looked upon as an instrument of charity, as a means for helping the publisher just because he needs the money. It is folly to look upon it as a mere scheme of questioned legitimacy. Likewise it is unprofessional and it is business suicide for the publisher to render only so much service as will enable him to pull the thing through with a satisfactory profit. He must deliver the goods. And when he does deliver the goods he is entitled to rewards commensurate with the quality of the goods and the completeness of the delivery.

I think that there is a tendency to make these papers too exclusively technical. I do not mean that the text should be less thoroughly scientific. I mean that the editor should keep in mind the vital fact that while an engineer, for instance, should be a technologist, he cannot be a really great engineer unless he is also a man of affairs. The technical journal of the first class is the companion of the mature man, not of the schoolboy. The engineer, the railway manager, the manufacturer or the artizan in the shop, who is doing his work in the world is a human being, and oftentimes he is a statesman. To expect this sort of a being to be content with cosines and tangents, with cold-hash reprints, with complex formulae, with terrifying terminology, with theoretical abstractions, and with these things alone, is a pathetic joke. And the worst of it is, he will refuse to be content with them. These men want practical engineering work, and the activities of their several callings described, discussed and interpreted not alone technically but also in the terms of the social, economic and political purposes of that work and those activities. Engineering and business problems in the final analysis are not mere problems in mechanics or mathematics. They are problems of society; they are problems, the solution of which involves the welfare of the human race.

These considerations, I believe, sanction the proposition that the future of this country, the sane solution of some of its gravest questions should be powerfully influenced by our technical press. And let me remark in passing that a somewhat extended familiarity with technical journals in other countries as well as with those at home, impels me to say that our technical and trade journals lead the world. Our large public questions are to a remarkable degree of an industrial nature. The interworkings of political, economic and business forces were never so pronounced in any nation as they are with us to-day. There never was a time when straight thinking, candid investigation and courageous speaking were so much needed as we need them now. And they are needed not alone for the regeneration of the common mob. Many magnates have maggots. In my judgment it is the business of the technical journal to take a larger share in this work than it has done hitherto. It should broaden out, and in its endeavor to broaden out it should have generous co-operation.

Among the technical journals of the country there are none more worthy than those devoted to the railway industry. And there are none upon which so great a responsibility rests. The railway problem has almost infinite ramifications and the railway business is one of infinite complexity. This variety and breadth of interests defines the scope of the journal that would cover them.

It requires more men, more brains and more money to make a good railway journal than is required to make an equally good paper in any other field of which I know.

Whatever may be said in derogation of American railways, the fact remains that they constitute, and for the last half century have constituted, the greatest force in American political, social and material development. A foreign observer who visited this country just prior to the meeting of the International Railway Congress at Washington in 1905 made the remark: "I am not surprised at what you have done here, but I am amazed that you should have done it all in two hundred years." It is the railway that has compressed into one century the accomplishment of ten centuries. The achievements of railway enterprise is the standard by which railway journalism must be and will be measured.

I must now conclude by trying to thank you for your kindness to me. I wish I could say what I would say if I knew how. Between friends few words are necessary. It was not necessary that I should have this public expression to be assured that you are my friends. There are men here who have been friends to me indeed, because they were friends in need. There are men here who, when the skies were dark, gave me words of cheer and made me believe that the clouds had silver linings, though the linings were invisible as all good linings should be. There are men here who have spoken good words for me where they never intended that I should hear of it, and where their potency was great because they were disinterested. There are men here who, not given to speech, have clapped me on the back and helped me to push when the load had to go up hill and when the hill was rough and steep. There are men here who have taken my word for things when my word was all I had to give. There are men here who have been sympathetic and reasonable when on the face of the returns they had just cause for disbelief in my good faith. There are men here who have shown forebearance and trust and faith when forebearance and trust and faith were the things I needed most. There are men here who have shown me that they are my friends in spite of evil report and false accusation. There are men here who have "boosted" when they might have "knocked," and there are those who "knocked" gently when they might have hit hard. There are here former business associates, former partners, who are also friends, to whose help, ability, and devoted loyalty I owe more than any words ever can express.

To all of you I am grateful. I am thankful that I have such friends. No man was ever more bountifully blessed in his friends. I shall remember this occasion as long as I live. And as long as I live it is bound to influence my walk and my thought. Gentlemen, I thank you all with all my heart.

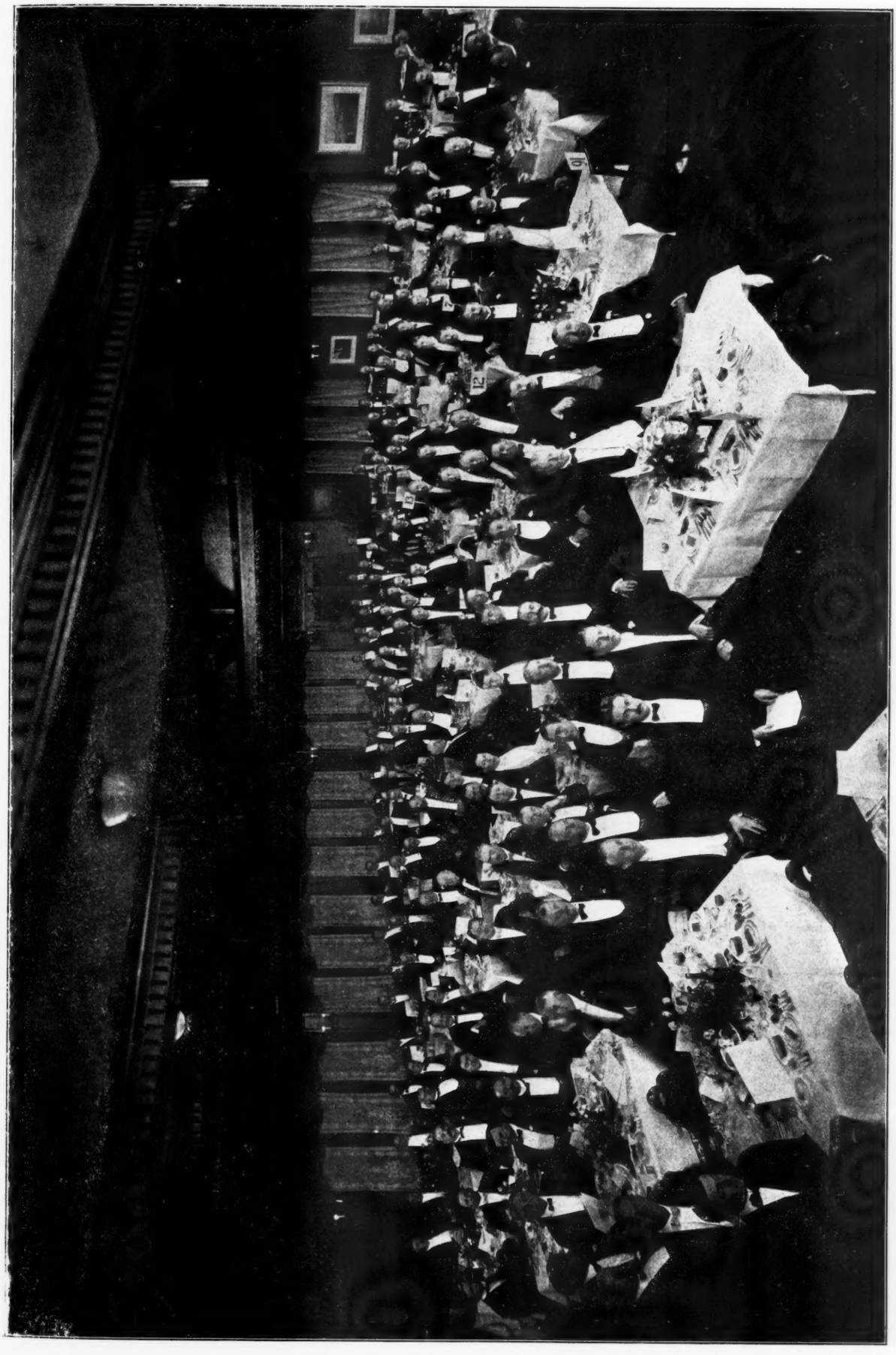
The following accepted invitations to the dinner:

Albright, W. B.
Aldcorn, Thos.
Allen, Samuel G.
Allison, J. Wesley
Andrews, J. Stewart
Atwater, Frederick
Adreon, E. L.

Baker, E. H.
Barbey, F. A.
Bartholomew, W. S.
Basford, G. M.
Bateman, James G.
Bateman, W. H. S.
Beale, Horace A., Jr.
Bell, J. V.
Best, Leigh
Bettendorf, W. P.
Bjerregaard, E.
Black, Robert
Blanchard, W. A.
Blewett, Scott H.
Boardman, W. H.
Bonsall, J. S.
Bourne, Geo. L.
Bowling, Stephen J.
Brain, L. F.
Brown, J. Alexander
Brown, John T.
Buchanan, E. G.
Buker, J. E.
Bush, S. P.

Call, D. W.
Carr, Geo. R.
Carr, Robert F.
Casey, F. A.
Castle, Chas. C.
Chamberlain, J. T.
Chur, Walter
Clark, C. Peter
Clark, F. H.
Coffin, J. S.
Currie, J. C.
Cutler, Otis H.

Davis, Geo. L. L.
Dee, Wm. V.
Deems, J. F.
Delano, F. A.
Dennis, A. P.
Dinsmore, Frank
Dinsmore, Chas. L.



Dinner to Hugh M. Wilson.

Dixon, Robert M.
Dunn, S. O.
Edmunds, F. W.
Edwards, O. M.
Ellicott, J. R.
Elliott, P. M.
F. F. Fitzpatrick
Forsyth, Wm.
Fowler, Geo. L.
Frost, Harry W.
Furry, Frank W.
Fuller, S. R.
Gardner, W. A.
Garrett, M. A.
Garstang, Wm.
Gayley, O. C.
Gibbs, A. W.
Gowing, J. Parker
Gravener, W. Ross
Groobey, Geo.
Hallett, Reuben C.
Havron, John
Hawley, C. S.
Hawley, H. S.
Hayes, Scott R.
Hegeman, B. A., Jr.
Heintzelman, T. W.
Hendee, E. T.
Henderson, Geo. R.
Henry, J. S.
Henry, W. T.
Herr, E. M.
High, John M.
Hill, John A.
Hine, Maj. Chas.
Hoit, W. W.
Hotchkiss, C. W.
Howard, Clarence H.
Howell, H. C.
Humphrey, A. L.
Huntley, F. P.
Hurley, John D.
Huyet, R. F.
Ingalls, F. A.
Jennings, D. F.
Johnson, A. B.
Kendig, R. B.
Kennicott, Cass L.
Kittredge, A. M.
Kittredge, H. G.
Knickerbocker, Chas. K.
Lamon, J. A.
Lamont, Robert P.
Lane, F. W.
Leigh, E. B.
Lindstrom, C. A.
Madill, Thos.
Marshall, Wm.
McAdam, A. D.
McCarthy, Jas. J.
McGowan, W. S.
Magraw, Wm. E.
McIntosh, Wm.
McNaughton, Jas.
McQuiston, J. C.
McVicar, Robert
Milliken, J. H.
Mills, C. R.
Mills, Geo. F.
Milner, J. T.
Mitchell, A. E.
Molleson, Geo. E.
Morris, Ray
Milliken, A. H.
Neuffer, J. G.
Nind, J. Newton
Noble, D. C.
Old, A. F.
Ostby, O. F.
Otis, Spencer
Pearsall, G. H.
Peirce, C. C.
Pflager, H. M.
Phillips, S. R.
Pilson, B. F.
Pomeroy, L. R.
Post, Geo. A.
Post, Geo. A., Jr.
Postlethwaite, C. E.
Pye, D. W.
Quayle, Robert
Reese, F. T.
Reynolds, John N.
Riddell, Chas.
Ripley, R. H.
Ross, Mark A.
Royse, Daniel
Runnells, Clive
Salmon, W. W.
Sawyer, J. D.
Schlacks, W. J.
Schroyer, C. A.
Seley, C. A.
Shepard, Louis A.
Sherman, L. B.
Shults, Chas.
Shults, F. K.
Simmons, E. A.
Simpson, T. H.
Simpson, W. M.
Sinclair, Angus
Slagle, E. R.
Smith, Willard A.
Stafford, B. E. D.
Stanton, Geo.
Terbell, J. B.
Thomas, John H.
Toothe, Edward S.
Turner, Alexander
Waitt, A. M.
Wakeman, J. M.
Walbank, R. T.
Walker, Chas. E.
Walker, E. H.
Ward, John E.
Waycott, Albert
Wetmore, A. B.
Whipple, A. L.
Wildin, G. W.
Williams, E. M.
Wilson, John T.
Yeomans, Geo. G.

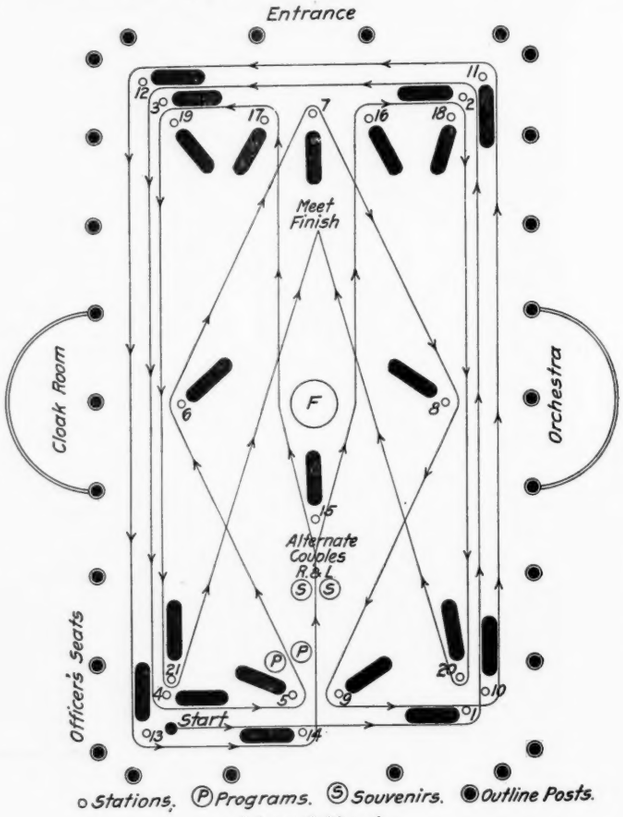
The following sent regrets:

Allen, W. F.
Besler, W. G.
Bryant, G. H.
Carry, E. F.
Conard, G. P.
Eaton, F. H.
Goodnow, C. E.
Harrison, Fairfax
Hurley, E. N.
Kelly, W. V.
Lewis, W. H.
Marshall, W. H.
McGraw, J. H.
McKenna, E. W.
McKenna, R. F.
Miner, W. H.
Pellitier, L.
Sargeant, Geo. H.
Scott, Geo. E.
Symons, W. E.
Vaughan, H. H.
Willard, Daniel

J. H. Manning, superintendent of motive power of the Delaware & Hudson, Albany, N. Y., has about recovered after a serious operation. Mr. Manning will not attend the conventions and his presence and counsel will be duly missed.

THE MASTER CAR BUILDERS' BALL.

Elaborate arrangements have been made by the special committee in charge of the Master Car Builders' ball this (Tuesday) evening. As in the case of the Master Mechanics' ball, everything has been arranged according to blue-prints and carefully prepared specifications and the grand march promises to be one of the most satisfactory ever held at these conventions. The line of march and the stations of the floor committee are shown upon the accompanying diagram. The start is from the south end of the hall, as last week. Thence the couples will proceed down the middle of the floor to a point about half-way between the end and the fountain, where the lines will separate, although couples passing to right and left pass the fountain, and thence in parallel lines to the other end of the hall. Here one line will pass to the right and the other to the left and return toward the south end, along opposite sides of the hall. The leaders will then move diagonally to a central point near the entrance, thus with the lines along the sides of the room forming the letter M, in honor of the president of the association, Mr. McKenna. In this position a photograph will be taken. Mr. E. H. Walker is chairman of the sub-committee in charge and to him is due the credit for this arrangement. He is assisted by Messrs. Midgley, Berry, Garrett, Hibbard, Seabury, DeRosset and Williams.



Line of March.

It is said to be estimated by one of the users of the Davis-Bournonville oxy-acetylene process that the weight of a certain steel ship can be reduced 360,000 lbs., which not only saves that amount of material, but lessens the draft several inches. There are many instances wherein the production of metal articles can be improved, and made lighter, stronger and cheaper by the process. Practical demonstrations are being given every day at the booth at the rear of the Creek Temple.

MASTER CAR BUILDERS' ASSOCIATION.

Proceedings of the First Session of the Forty-third Annual Convention.

The first session of the Master Car Builders' Association's convention was held in the Greek Temple on Young's Million Dollar Pier on Monday, June 21.

President McKenna called the meeting to order at 10 o'clock and introduced Rev. Newton W. Cadwell, D.D., Pastor of Olivet Presbyterian Church, Atlantic City, who opened the meeting with prayer.

The president then read the following address:

ADDRESS OF PRESIDENT M'KENNA.

In opening this, the Forty-third Annual Convention of the Master Car Builders' Association, it is my pleasant privilege to extend personal greetings to all members and friends here assembled, with assurance of a keen appreciation of the honor and confidence reposed in me.

R. F. McKENNA,
President, Master Car Builders' Association.

From a purely business viewpoint we could meet under circumstances more pleasing; but the vast commercial industries of our country are daily resuming active operations in mills and factories that have long been idle, and as railways are being benefited by these improved conditions, we can reasonably assume that better times are assured.

Rigid economy by railway companies throughout the country has prevailed during the past year. It has been largely compelled by federal and state legislation that caused investors to hesitate in accepting securities offered, and mechanical departments of railways have suffered. This condition has been more acute during the period mentioned than at any time since 1894, and at no time in the history of railways has their ownership and management been subjected to so much adverse criticism from those who have no intimate knowledge of railway affairs.

With an ill-advised desire to gain popularity, certain public men and some of the press have constituted themselves guardians of public welfare. To achieve their ends they have caused great injury to commercial life, and corresponding damage to railway companies. Until legislative bodies repeal disastrous federal and state laws they have enacted, the public at large, which includes railway owners, managers, employees and patrons of the transportation companies, will continue to be more or less affected.

Railway companies in their zeal to economize, to protect themselves, and to conserve the best interests of all concerned, are buying only such materials and employing no more labor than is absolutely essential to the daily conduct of affairs, husbanding their resources until conditions again become stable. Appearances suggest that there is to be a respite from unfair legislation, and incidentally unjust criticism.

The people of this broad continent are our rulers. As they now realize the deterrent effect of extreme measures forced upon the railway companies, they view the matters that have been a subject of undue agitation in a more sane and logical manner.

As highways of commerce railways have been remarkably successful in surviving efforts made to oppress them, and have given conclusive proof of their strength and stability.

Those of us upon whom has developed the maintenance of vehicles used in the transportation of the vast resources of this continent have had a hard task. That we have been successful is evidenced by the good condition in which we have kept the 2,000,000 freight cars and 45,000 passenger cars that go to make up the equipment of the railway companies which constitute the maintaining membership of this association.

The founders of this association could hardly have anticipated its growth, nor the demand that would be made upon it in the way of improvement in car construction, regulating car interchange, etc. On the strong foundation that they

built has been erected not only this great association, but from year to year other associations have been added, all of which are closely allied with us, and all working in perfect harmony. These, with the several railway clubs scattered throughout the country, have been valuable auxiliaries; many of the reforms in car construction, car interchange, etc., having their inception in their meetings and being worked out to a conclusion in our annual conventions.

Speaking for the association as a whole, it is my desire to express appreciation of the work performed by the various committees during the past year. A special effort was made to have committee reports in the hands of members at a much earlier date than formerly, and this was accomplished.

The few cases referred to the Arbitration Committee during the past year demonstrate conclusively that the work of that committee in drafting of rules, etc., was most thorough and well done.

The report submitted by the Committee on Standards suggests but few changes, indicating the care taken in considering the elimination of old standards or the adoption of new.

The report of the Committee on Car Wheels contemplates radical changes. It is hoped that the association as a whole will consider these most carefully, with a view of adopting such as will result in a more satisfactory wheel being furnished for the requirements of our various railways. In the great labor incident to the preparation of this report, the committee was most ably assisted by the Association of Chilled Car Wheel Manufacturers. The recommendations submitted were the result of research on the part of those who gave the subject their most careful attention. It is pleasing to know that the wheel manufacturers heartily co-operated with the railway representatives in the effort to reach conclusions which seem to give a wheel that will prove much more satisfactory than has been furnished in the past.

It is to be regretted that the Committee on Salt Water Drippings from Refrigerator Cars is unable at this meeting to present a definite report. During the ensuing year greater effort should be made to devise satisfactory means for preventing the damage that is being continually done to bonding wires, rails, bridges and other appliances by the drippings from refrigerator and other cars. It is my suggestion that this association work in closest harmony with a committee of the Maintenance of Way Association on this most important subject.

Past presidents of the association in their addresses have heretofore dwelt upon the tendency shown by certain railways and private car owners throughout the country to pass over very lightly certain rules in the code that relate to billing matters.

The Arbitration Committee has devoted studious care to the preparation of the rules of interchange, and the rules promulgated by them are eminently fair, both to car owners and to companies making repairs. Practices that should be frowned upon have become general on certain lines, resulting in great annoyance, and often in decided financial loss to car owners. Mechanical departmental and divisional heads should therefore instruct foremen, inspectors, repairmen, billing clerks and others that bills must of necessity be prepared in accordance with the prescribed rules of the association. The unfair practices that are being followed by certain car owners can be made a matter of history if mechanical department heads issue necessary instructions, and in fairness to all concerned this should be done.

Care should be taken by the various committees of the association, and also by the association itself, in adopting new standards or advancing recommended practices to standards; but when, after due care and thought on the part of committees of the association, standards are adopted, they should be more generally followed by car owners.

The question of an M. C. B. standard coupler deserves the most careful thought and research on the part of car owners and coupler manufacturers. Something should be done without any unnecessary delay to relieve the railway companies of the necessity of carrying vast quantities of detailed repair parts for various makes of couplers. Interchangeability is possible and should be worked out to a satisfactory conclusion. It would perhaps be well if the association at this time recognized the side as well as the center unlocking arrangement for couplers.

We are called upon to provide a closer working arrangement with the American Railway Association, and there will be presented for your consideration the report of committee on proposed changes in our constitution and by-laws. Conditions in certain respects have changed of recent years, and this committee will recommend a revision that seems necessary to present requirements.

For years the question of consolidating the Master Car Builders' and the American Railway Master Mechanics' Associations has been the subject of discussion. Such action has heretofore not been deemed either necessary or desirable, and conditions at present do not indicate that it would now result in any benefit to railway companies. Unless improvement is possible, changes should not be favored. The two associations are separate and distinct so far as their line of action is concerned. The Master Mechanics' is of a technical character, having no legislative powers, and as the Master Car Builders' find it impossible to devote sufficient time to the proper consideration of the various reports submitted to them, the proposed consolidation seems unwise, especially as new topics, new subjects and new discussions would be introduced into our deliberations. There is sufficient work for each association in its own particular field, and as the method of procedure in handling work incident to locomotive repairs and construction, car repairs, construction and interchange, differs so very materially, it would seem desirable to handle them as two separate and distinct branches, so that the questions incident to each will be considered by two separate and distinct associations.

The electrification of railways is receiving the attention of the railway mechanical profession. We recognize that the time is near when electrification started on certain roads will extend to others. In view of the fact that all roads having representatives in this association will sooner or later be interested in the subject, it is recommended that a special committee be appointed to report to this association, from time to time, the best methods to be followed in arranging our present equipment for electric traction.

It is yearly becoming more difficult to secure lumber of the quantity and quality desired, and in fact required by the railways of this continent. It would be well to have a special committee appointed who would work in conjunction with departments of purchases and supplies of the various railways, and with the lumber dealers' associations, with a view of preparing specifications that would enable us to supply our lumber requirements to the best advantage of all concerned.

The Committee on Standards and Recommended Practice, whose report will be submitted to the association, has called attention to the necessity of revision of the plates, text, etc., of the proceedings of our annual conventions. This is a most important matter, and its careful consideration by the association as a whole is urged.

It is with great regret we recall that death has taken from us during the past year honored members of our association, as follows: George W. West, R. H. Soule, J. Wohrle and G. W. Butcher.

The ladies who have honored us with their presence it is hoped will so enjoy themselves that we will have them with us every year so long as this association endures.

To the members permit me to express my gratitude for the honor due me in permitting me to preside over your deliberations, and to extend my thanks for the uniform courtesy that has been shown during the past year.

To the members of the press here with us we express our appreciation for valued assistance given in carefully preparing and distributing the proceedings of our various meetings.

For the association as a whole, and for myself personally, thanks are extended to our worthy secretary, who for years has been a strong pillar in the support of this association. His ability is well known and appreciated by all.

Secretary Taylor then submitted his report, which, among other things, showed the following:

Active members in June, 1908, 424; 1909, 447; representative membership in 1908, 275; 1909, 292; associate membership, 1908, 14; 1909, 13; life members, 1908, 14; 1909, 14. Total membership, June, 1909, 769.

Number of cars represented in the Association, 1909, 2,403,961; 1908, 2,283,330, a gain in 1909 of 120,363. The receipts and expenditures for the year were $17,610.95.

The Secretary reported further that there were no bills remaining unpaid, except for the printing of one or two reports which came in late after the books of the Secretary were closed.

The Secretary further reported that 23 railways and private car lines had signified their desire during the year to become subscribers to the rules governing freight cars, and their names would appear in the rules of interchange. Two railways also signified their acceptance of the code of rules governing the interchange of passenger cars.

The Treasurer's report was presented by the Secretary and showed a balance on hand of $526.11. The report of the Treasurer was referred to the Auditing Committee.

The Executive Committee's recommendation that the dues for the current year remain as at present, $4 per vote, was approved.

The Secretary has appointed the following committees:

On Obituaries—B. F. Flory, on G. W. West; G. R. Henderson, on R. H. Soule; S. S. Stiffey, on John Wohrle; G. W. Taylor, on G. W. Butcher; H. E. Passmore, on J. B. Morgan.

On Resolutions—L. R. Pomeroy, Le Grand Parish, C. A. Schroyer.

On Nominations—J. S. Lentz, G. N. Dow, J. E. Buker, A. E. Manchester, D. M. Perine.

Prof. Charles H. Benjamin, Dean of the School of Engineering of Purdue University, was elected an associate member.

E. W. Grieves, a Past President of the association, was elected an honorary member.

W. C. Ennis, who has been a member of the association since 1884, and has withdrawn from active railway service, was elected a life member.

A letter from C. E. Fuller (Union Pac.) regarding standard height of drawbars was then read:

"I suggest that you take the matter up with the members of the Executive Committee, with a view of formulating a substitute resolution as an amendment to the Safety Appliance Act, which will remove the ambiguity which it is pretty generally admitted, exists in the resolution submitted to the Interstate Commerce Commission in 1893.

"For your information, I have recommended to the management of the Union Pacific the following resolution to take the place of the original resolution submitted to the Interstate Commerce Commission, and I think the Executive Committee should agree on some such form of resolution so that we may be in position to promptly give our recommendation when the time comes for doing so.

"'Resolved, That the maximum height of drawbars for freight cars measured perpendicular from the level of the tops of rails to the centers of drawbars for standard gage railways in the United States shall be 34½ inches, and the minimum height of drawbars for freight cars measured in the same manner shall be 31½ inches.'"

Mr. Fulier.—The reason for that suggestion was this: There seems to be an opinion that an empty car has to be 34½ inches or thereabouts to be accepted, and eliminating the words "loaded" and "light" is the only change in the proposed amendment. As near as I can find out it was not the intention that a car either loaded or empty was to be rejected if it came within the maximum and minimum height. There seems to be some question on that. Judge Moody, I believe, rendered a decision, and it seems to us that it is up to this body to set this matter right, so that it will remove any possible objection or friction.

The resolutions were received and adopted.

The secretary then announced that through the will of Mrs. Emma A. Tillotson, the Master Car Builders' Association was bequeathed the sum of $5,000. It was decided that the bequest be received and invested, and the interest thereon applied to such investigations as the Executive Committee may recommend to the association the form of investment to be left with the Treasurer subject to the approval of the Executive Committee.

The Secretary.—A communication from the General Storekeepers' Association regarding uniform specifications for lumber was considered by the Executive Committee at its meeting yesterday. This subject was considered by the Master Mechanics' Association, and was thought of such importance that it recommended that the subject be referred to the incoming Executive Committee to appoint a committee to confer with similar committees from other organizations looking toward the adoption of uniform specifications for lumber. The Executive Committee recommends similar action on the part of this association and I would like to have Mr. Seley present the same matter that was presented at the Master Mechanics' Association.

C. A. Seley C., R. I. & P.) then read the resolution passed by the Master Mechanics' Association.

This resolution was then adopted.

Messrs. Pomeroy, Evarts and Dodds were elected members of the Auditing Committee.

The first report was that of the committee on Revision of Standards and Recommended Practice, which was abstracted by Mr. Buker.

Discussion on Standards and Recommended Practice.

Mr. Kleine then presented the minority report of the committee.

The majority report was considered paragraph by paragraph.

C. A. Schroyer (C. & N. W.)—I wish to say, as regards paragraph 8, which reads, "A member suggests striking out the word 'malleable' for Journal Box Wedges, substituting therefor 'drop forged.'" That, I think, is a most excellent suggestion. In so far as the breaking of the wedges is concerned, we have never had any trouble, but I know you have trouble with the malleable iron wedges from the fact that they are made of such soft metal. The brass casting with the pattern number and with the size of the brass and initials of the road and initials of the M. C. B. Association on top wear up into the face of the wedge. We have had to take hundreds of our malleable wedges out and send them to the machine shop and with an emery wheel grind them off level again, because of the difficulty we have had in putting the brass into boxes with the malleable iron wedge. Where the branding on the top of the brass does not come right with the branding on the former brass, you have not a level bearing between the brass and the wedge.

William McIntosh (C. of N. J.)—If the principal difficulty with the malleable iron wedge is on account of the raised condition of the letters, would it not be possible to eliminate that feature, which I understand is done if we use a drop forged wedge? Further, would it not be possible to provide a steel wedge that would answer the purpose?

Mr. Schroyer—It is possible. The difficulty with malleable iron as a wedge is due to the fact that you must core it out and leave nothing but a shell. The coring out is made necessary for the purpose of getting the benefit of the malleable feature. If you make the wedges of drop forgings or of steel, you can get a good, broad, wide bearing on top which will prevent wear and you can get a solid bearing between the wedge and the brass which will prevent wear. Those are the two things we are trying to obtain, and they cannot be obtained with the malleable iron wedge.

Mr. Buker—In paragraph 30, the committee approves the use of drop forged wedges for 100,000 lbs. capacity cars, and I do not believe that will bar the use of malleable iron wedges for light passenger cars. The committee believes that for the higher capacity cars the wedges should be drop forged.

R. P. C. Sanderson (Virginian)—Is there any reason why we should not use a properly made cast steel wedge? Why limit ourselves to drop forgings? I do not think that is right.

F. W. Brazier (N. Y. Central)—The easiest way out would be to say, "Drop forged or equivalent."

Mr. Seley—I move that the suggestion of the committee be approved by the convention.

Motion carried.

F. H. Stark (Pittsburgh Coal Co.)—It has been suggested here that we add to that "drop forged or cast steel," so as to give the option of using either a drop forge wedge or a cast steel wedge.

Mr. Kleine—Cast steel is already designated on the standard sheet, and the substitution recommended here is simply to drop out "malleable" and insert "drop forged."

D. F. Crawford (Pa. Lines)—I move that the minority report, paragraph 40, be substituted for the report of the majority, paragraph 40.

Motion carried.

Mr. Crawford—I would move that the report of the minority, paragraph 48, be substituted for the report of the majority on this question of lettering, numbering and marking of freight cars.

Motion carried.

Mr. Seley—In regard to No. 53, the committee's recommendation I think should be adopted, as we show one width of box and another width of pedestal in our present cuts, owing to the fact that the report of the committee last year approved one and did not approve the other; whereas, both the box and the pedestal were increased in width in the committee report.

Mr. Crawford—This report is really presented to the convention twice this morning, and I would make a motion that such of the recommendations as the committee on standards have concurred in be referred to committees for investigation as they suggest be referred to letter ballot as may be necessary, and wherever they call attention to typographical or similar errors in plates or text, that those instructions be given through the proper channels for making such corrections.

Motion carried.

The next committee report was that on Train Brake and Signal Equipment. Mr. Pratt read the report.

Discussion on Train Brake and Signal Equipment.

Mr. Pratt (continuing)—Two manufacturers have furnished the requisite number of test triple valves at this time, but they were not received until about 10 days ago, too late for a test and report at this convention, but the committee has under consideration the conducting of those tests presently.

H. La Rue (C., R. I. & P.)—I would like to ask the committee if it is the intention, in the next to the last paragraph, to suggest that we discontinue the use of malleable iron to the exent of including the head with the wrought iron connection.

Mr. Pratt—I do not think I can answer that offhand. There was a notation, as I remember, on the cut in the M. C. B. design. Perhaps the secretary has that cut and can answer the question. I think it gave an alternative there.

Mr. Seley—My recollection of the standard is that this sheet shows a malleable iron bottom connection, a star connection, and it is my understanding that the committee wishes to substitute wrought iron or steel round iron in place of the star shaped malleable. Is that correct, Mr. Pratt?

Mr. Pratt—I think that is, Mr. Seley, but I do not seem to have that very plainly in mind.

W. E. Dunham (C. & N. W.)—It is the intention that that star section bottom rod be omitted.

Mr. Sanderson—There is one question I would like to raise with reference to the brake shaft. It is no doubt the best way to get at information of this kind, to send out a circular inquiry, tabulate and diagram the results; but it does not seem to me that we want to be guided by the average of those results if we are trying to get up something better or an advance on present practice. If the Executive Committee felt that the brake shaft practice was inefficient and bad, and needed reform, it does not seem to me that to go back to the average of all bad practice, is making any advance. The point I want to raise particularly is this—I believe it is common practice, and is conceded, that a square fit in the brake wheel is absolutely necessary. If it is necessary in the hand wheel on the top, it is more than ever necessary in the ratchet wheel half way down the shaft. You don't get a fit with these malleable ratchet wheels in the fit of a key on a flat that is made to the side of a shaft. They get loose and twist around, and I contend that there ought to be a square foot there. I think the committee in following what was the average practice in that way, has not gone as far as they ought to have in improving for a future standard.

Mr. Pratt—If you had seen the tabulated figures in detail you would have seen that Mr. Sanderson is quite consistent. He has not adopted anything that anybody else ever used, but the committee could hardly go to the extreme that some railroads have. What is meant more particularly by this "splitting the difference," as you might say, is, one railroad uses a 1¾-in. brake staff and another uses 1⅛ in. It was considered good practice perhaps to use 1¼ in., but not to go to 2 in. or cut down to ⅞ in. But there was no attempt to compromise as between a square and a round hole, or a hole with a key or a square fit. It is understood that we have the right to adopt one or the other. It was thought, although a recommended practice or a standard might not be applicable to all cars existing, that our company, for instance, not conforming to the standard, could have certain patterns changed, and as cars equipped with the standard came on our road, we could have a set of fittings that would apply to that car; and the same way with other members, instead of carrying a vast stock of different sizes and dimensions. So it was thought that as a whole it would be a benefit almost immediately, and as the years went by the standard would become more uniform and greater advantage gained from it.

Mr. Sanderson—I wanted to know whether the committee really felt that a round fit with a key was as good as a square fit for future use? If "yes," why didn't they use the same fit on the top?

Mr. Hennessey—As the brake staff comes in practically under safety devices, I think this is something that should be handled with great care. The brake staff submitted by the committee will answer all purposes, but at the same time there are many constructions of cars to which it would be very hard to adapt this particular brake staff. We are getting a little off the lines of emergency, as I might call it. If we have been able to get along with a brake staff that was not very expensive when the hand brakes were practically the only brakes used on a road, I do not see why the railways should be compelled to-day to go to the more expensive brake staffs. In fact, braking by hand is almost done away with to-day. Even in the switching yards, your switchmen do not pretend to ride the cars and use the hand brakes, and sometimes I think in looking through large yards that there is reason to ask why we are carrying brake staffs at all.

Mr. Miller—Regarding the matter of adopting a square hole for the ratchet wheel, it is no trouble to make the hole in a wheel about the size of the shaft so that there will be no slack motion there. But it is very expensive. The general way of getting this square hole in the wheel is by means of a core, and consequently you have a good deal of slack motion. If you have a key or a set screw there, you have a positive fit; if you go to a square hole you have no fit at all, and there is more than one source of slack in the brake wheel. Consequently when the brakeman lets up on his brake wheel, if he does attempt to set it up, there is considerable slack there.

Mr. Stark—In support of the committee's report I would like to consider the question of the mechanical work required to provide for a square on the shaft.

Mr. Sanderson—Square bar iron all the way down.

Mr. Stark—Then it would be necessary to draw out the balance of the bar.

Mr. Sanderson—Don't draw it out; just leave it square.

Mr. Stark—Another question is the matter of repairs. If you have a square fit on a ratchet wheel it makes it far more difficult to withdraw the shaft for repairs, which has to be done very commonly.

Eugene Chamberlain (N. Y. Cent.).— It seems to me that the remarks of Mr. Hennessey are so vital that they should be called to the attention of each member present, in pointing out the fact that the method of applying brakes upon cars to-day is principally by air, while we are now attempting to strengthen up an apparatus which we used for years before air was applied. It seems to me that the general public will not think much of it if you go strengthening an apparatus of that character to-day, when it is just a trifle late.

T. L. Burton (Cent. of N. J.).—I fail to understand where the committee has shown a disposition to adopt anything different from what we already have, as reference was made by the last speaker and by Mr. Hennessey. The association is on record as recommending nothing except the maximum height of shaft from the rail. I do not think the committee can justly be accused of having shown a disposition to recommend a more expensive shaft than has yet been used, inasmuch as we have not done anything so far as recommendation is concerned.

Mr. Hennessey—My intention was not to criticise the committee's report, but what I had in mind was that in the near future there is a possibility of the M. C. B. standards becoming the law of this land, and you have to go pretty carefully in what standards you adopt. If they once become a standard by law what is it going to cost you then to meet the requirements of your standards?

C. A. Schroyer (C. & N. W.).—The question is to get the most efficient brake shaft by the easiest and simplest mechanical methods, and at the least cost, not only first cost but cost of maintenance. The question was brought up for consideration before this association at one time regarding the making of the brake shafts all in one piece and not having any weld in them at all. While we have never had any trouble ourselves regarding the breaking of the welds, breaking of the staffs in the welds, we have always continued to make them in practically the manner that is illustrated here. I believe that is the general practice throughout the country. I know that some roads are now making brake shafts of 1½-in. round iron and making them in one piece all the way, but in that case you have got to make a seat for your key, and I think a safeguard and precaution that would be an economical and efficient one would be to put a set screw through the hub of the brake ratchet right at the corner of the key so that it could not possibly get out or move. The use of a square brake shaft would entail the drawing out of a round in the centre, or else make a thimble to slip down over the shaft so as to work in the box and prevent buckling or warping of the same. I think the brake staff that is indicated here is an excellent one. It met all our requirements in the years when we had to use hand brakes and it certainly should do it now when we do not have very much occasion to use hand brakes.

A. W. Gibbs (Penna.).—I think the committee is right that we should work with the idea of bettering our hand brake. With the introduction of hump yards the braking is as necessary as ever it was, and if we leave our rods as they were before we used the heavy cars the men will hesitate to use the brakes, as they will be afraid of their breaking. We have enough men killed from the breaking of rods. We require very severe braking in the classification of hump yards, and they are growing. We can do away with the whole thing, and let the cars slide and take our medicine, but many roads, ours among them, habitually ride each draft down, and we feel the requirement of making the hand brake in one piece is of such importance that we have made it a standard for many years in our own shops, and have recommended its use on other roads. I do not agree with Mr. Hennessey that the hand brake is becoming useless. I think the committee is correct in recommending that it be made in one piece.

Mr. Seley—I believe it is generally customary, in introducing new matter into the records of the association, that they should first go to recommended practice before being advanced to standard. I therefore move that the plate submitted by the committee, proposed brake shaft and fittings, Fig. 2, be made a plate of the association under Recommended Practice.

Motion carried.

Mr. Schroyer—I move the acceptance of the report, and that we submit the same to letter ballot, in accordance with the recommendations of the committee, for adoption as Recommended Practice or as Standard, as they may be required.

Motion carried.

The next report was that of the Committtee on Brake-Shoe Tests. The report was presented by E. D. Lockwood (C., C., C. & St. L).

Discussion on Brake Shoe Tests.

Mr. Lockwood—I might say in regard to this that the scale has been received and has already been in service for over a month. We have with us Professor Endsley, of Purdue University, who might make some remarks on some of the shoes he has tested and as to the accuracy with which the scale performs its work, the claim being made that it is sensitive to within one-thousandth of a pound.

The privilege of the floor was extended to Professor Endsley.

Professor Endsley—I have no written report to make. The scale was received about May 10 and installed upon a date which had been previously arranged by the society. An attempt was made to weigh in the open laboratory, but it was found that the slight draft, which could not be detected by a person, would affect the accuracy of the scale. A small house or covering was built over the scale, and an attempt was made to check its accuracy from day to day. By inserting a bicycle ball between the wheel and the connection between the machine, so that the alinement was exactly the same at all times, we were able to check from time to time to within one one-thousandth of a pound, or better, the scale never being off more than a little less than one one-thousandth of a pound. After the scale is balanced on any given day, a small bird shot weighing one five-thousandths of a pound will unbalance the scale by putting the bird shot out on either side. That is as accurate as anything could reasonably be expected to be. You can detect a difference of from one one-thousandth to one five-thousandth of a pound from day to day, caused either by the barometer reading or something we have not been able to detect, which affects the accuracy of the scale to about one one-thousandth of a pound.

Mr. Schroyer—I want to say that it is extremely gratifying to me that we have had a committee on brake-shoes for the last twenty years, and almost annually we have had a report from the committee, but I want to call attention to the fact that we are still making brake-shoes as we did twenty years ago. We apparently had this solution of the problem, that we now have a weighing machine that will weigh the wheel with great accuracy.

Mr. Lockwood—If the Brake Shoe Committee's labors are going to be of any importance, we must not only determine the individual wear of the shoe on different classes of wheels, but must note how much that particular shoe wears the wheel itself. It was down to a fine point when we had a scale that could be adjusted to one five-hundredth of a pound, but now with our scale, which can be adjusted to within one five-thousandth of a pound, it should be possible for us to do even more accurate work than in the past.

The report of the committee was received and the work ordered continued.

REVISION OF STANDARDS AND RECOMMENDED PRACTICE.*

A circular of inquiry was sent to all members to suggest changes that were deemed advisable. The committee submits its report as follows:

STANDARDS.

Journal Boxes and Contained Parts. Journals 3¾ by 7 Inches.

Page 607, Sheets M. C. B. Nos. 1, 2, 3.

2. A member suggests increasing width of opening in the back of box from 5 inches to 5½ inches.

Suggestion not approved by committee.

3. A member suggests that thickness of anti-friction lining be made standard on all journal bearings.

Suggestion not approved by committee.

4. A member suggests striking out the word "malleable" for journal box wedges, substituting therefor "drop forged."

Suggestion not approved by committee.

5. A member suggests insertion of dimension center line of bolt hole to inside bearing face of lid, and to correct text accordingly.

This is an error in drawing and Secretary is requested to have necessary correction made on cut. Text is correct. (See last year's committee report.)

6. The establishing of a distance between center line of lid and spring housing was considered by your committee and referred to Committee on Freight Car Trucks.

7. A member calls attention to the fact that on 3¾ by 7 inch and 5½ by 10 inch journals, the vertical clearance between side lugs on bearing and bearing wedges is ⅛ inch, and for 4¼ by 8 inches and 5 by 9 inches, 1/16 inch, and suggests that this clearance be made ⅛ inch for all sizes of journals.

This suggestion is referred to Committee on Freight Car Trucks.

Journal Boxes and Contained Parts. Journals 4¼ by 8 Inches.

Pages 607 and 608, M. C. B. Sheets 4, 5, 6.

8. A member suggests striking out the word "malleable" for journal box wedges, substituting therefor "drop forged."

Suggestion not approved by committee.

9. A member suggests that thickness of anti-friction lining be made standard on all journal bearings.

Suggestion not approved by committee.

10. A member suggests that width of opening in back of box should be increased from 5½ to 6 inches, claiming openings are too narrow, and cause boxes to be broken in large numbers.

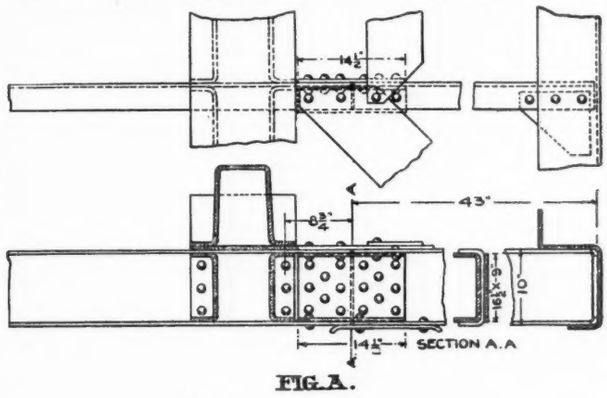


FIG. A.

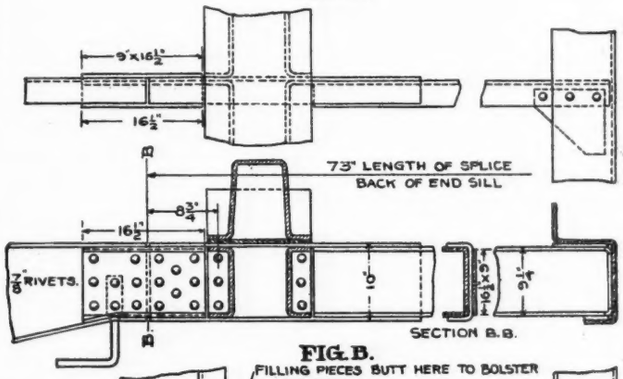


FIG. B.

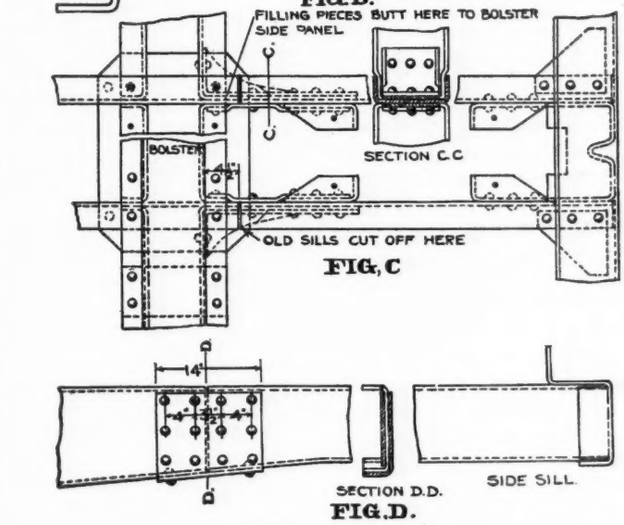


FIG. C

FIG. D.

Splicing of Sills.

Committee does not recommend change in present standard.

Axles, Wheel, Circumference, Measurements, Wheel Tread.

Pages 610, 611, 612 and 634, Sheet M. C. B. No. 7.

11. A member suggests omission of tread of cast-iron wheel and the insertion therefor of steel and steel-tired wheel treads.

*Report presented at the annual convention of the Master Car Builders' Association. Committee: T. S. Lloyd (chairman), J. E. Buker, T. M. Ramsdell, W. E. Dunham.

Committee concurs in removing tread of cast-iron wheel from Sheet No. 7, as it is duplicated on Sheet No. 12.

The insertion of steel and steel-tired wheel treads on Sheet No. 7 is referred to the Wheel Committee for their consideration.

Standard Brake Head Shoe and Key.

Pages 612 and 613, Sheet M. C. B. No. 8.

12. A member suggests changing center lug of brake shoe and recess for same in brake head, so that the width of lug will come flush with side face of shoe, which will provide better bearing for center lug of brake shoe and prevent twisting in head.

Committee concurs in this suggestion and text and Sheet M. C. B. No. 8 should be altered to conform thereto.

13. A member suggests increasing length of brake-shoe key to enable it to be secured in some manner to prevent loss at mechanical dumping plants.

Committee does not concur in suggestion to lengthen key, but recommends that ¼-inch hole be punched in brake-shoe key, center of hole located ⅜ inch from end of key to permit insertion of ring or cotter.

Air-brake Hose. Air Brakes on Freight Cars. Location for Main Air Pipe on Freight Cars.

Pages 615 and 616, Sheets M. C. B. No. 9.

14. A member suggests elimination of malleable iron bottom rods, substituting therefor wrought iron.

This suggestion is referred to the Committee on Train Brakes and Signals.

15. A member suggests standard size for brake wheels.

Suggestion referred to Committee on Train Brakes and Signals.

16. A member suggests that note be added to Sheet M. C. B. No. 9 to the effect that it will not be permissible to hang brake beams from any portion of body of car, on cars built after September 1, 1909, as per letter ballot of 1908.

Committee concurs in this recommendation, and further suggests that last paragraph, page 614, under heading "Brake Specifications and Tests," be transferred to "Air Brakes—General Arrangement and Details," page 615.

17. A member suggests that text on Sheet M. C. B. No. 9 specify that standards for air brakes on freight cars and standard location of main air pipe on freight cars apply to *wooden cars only.*

Committee concurs in this recommendation.

18. A member suggests change in text to provide for $^{7}/_{16}$-inch straight link hand-brake chain as standard for all freight car equipment.

This suggestion is referred to Committee on Train Brakes and Signals.

19. A member suggests a note on Sheet M. C. B. No. 9, to the effect that all rods be ¾ inch, if stress does not exceed 15,000 pounds per square inch, and width of body levers be 3¼ inches, and of truck levers 3¾ inches, if stress does not exceed 23,000 pounds per square inch.

This suggestion is referred to Committee on Train Brakes and Signals.

Pedestal for Journals 3¾ by 7 Inches.

Page 644, Sheet M. C. B. No. 10.

20. Committee has no changes to suggest.

Automatic Coupler—Contour—Line—Limit Gages.

Pages 623, 624, 625 and 626, Sheet M. C. B. No. 11.

21. A member suggests adding to note on Sheet M. C. B. No. 11, where reference to increasing the dimension from back of coupler horn to inside face of knuckle is made, the following: "And the dimensions from back of butt to inside face of knuckle to be 30½ inches.

Committee recommends that 30½ inches be added to present notation on plate.

22. A member suggests that the spacing between coupler horn and buffer beam be 1¾ inches for wood underframe cars and 2¼ inches for steel underframe cars for all spring gear, and 2¾ inches for all friction gear.

Committee recommends no changes from present dimensions.

23. A member suggests that provision be made whereby lower half of knuckle pin will be prevented from dropping out in case of breakage.

Suggestion is referred to Coupler Committee.

Terms and Gaging Points for Wheels and Track.
Guard Rail and Frog Wing Gage.
Reference Gages for Mounting and Inspecting Wheels.
Wheel Check Gage.
Wheel Defect and Worn Coupler Limit Gage.
Wheel Tread and Flange Thickness Gages for New Wheels.
Wheel Tread and Flange.

Pages 626 and 634 to 636, inclusive, Sheet M. C. B. No. 12.

24. A member suggests the substitution of the two-slot gage, when corrected to conform to Rule No. 10, for the gage now shown on this plate.

Committee concurs and recommends that wheel defect and worn coupler limit gage shown in report of committee, page 477 Proceedings, and corrected as per circular dated September 22, 1908, be substituted for the gage shown on Sheet No. 12, and suitable reference made in text.

25. A member suggests that text and gages showing distance between backs of wheel flanges be changed to 4 feet $5^{9}/_{16}$ inches at gaging point, so as to harmonize with the Interchange Rules. He further suggests that the so-called reference gage for mounting and inspecting wheels be dropped from Standard Practice and a gage similar to print he submitted be introduced for mounting of wheels. Also, a check gage similar to print he submitted be introduced, which latter gage is at the same time to be used by inspectors in yards and terminals.

Suggestions referred to Wheel Committee, together with prints.

Journal Box and Contained Parts for Journal 5 by 9 Inches.

Page 608, Sheet M. C. B. Nos. 13, 14 and 15.

26. A member suggests reducing the wall at side to the 1906 standard, and restoring the inside dust-guard wall at top to strengthen box and form backing for dust-guard, as a $^{5}/_{16}$-inch movement of dust-guard toward either side permits dirt to enter; and further suggests 3⅜ inches radius struck $^{7}/_{16}$ inch up from center for top, inside and outside dust-guard walls, and 3⅛ inch radius struck $^{5}/_{16}$ inch below center line for inside and outside bottom dust-guard walls.

Suggestions referred to Committee on Freight Car Trucks.

27. A member suggests omitting from journal bearing wedge "cast steel," as none of the other wedges shown have these words on them.

Suggestion is approved by committee.

28. A member suggests striking out the word "malleable" for journal box wedges, and substituting therefor "drop forged."

Suggestion is approved by committee.

29. A member suggests that thickness of anti-friction lining be made standard on all journal bearings.

Suggestion not approved by committee.

Journal Box and Contained Parts for Journal 5½ by 10 Inches.

Page 609, Sheet M. C. B. Nos. 16, 17 and 18.

30. A member suggests striking out the word "malleable" for journal box wedges, and substituting therefor "drop forged."

Committee approves of this for 100,000 pounds capacity cars.

31. A member suggests that thickness of anti-friction lining be made standard on all journal bearings.

Suggestion not approved by committee.

32. A member suggests the reduction in side walls for dust-guard by striking a 3¾-inch radius, struck ⅜ inch up from center line of box for inside and outside top dust-guard

walls, and a 3¾-inch radius struck ¼ inch below center for inside and outside dust-guard walls, to permit ¼-inch lap on dust-guard walls with guard in extreme position.

Suggestion referred to Committee on Freight Car Trucks.

SAFETY APPLIANCES.

Box and Other House Cars With End Ladders (Wood).
Box and Other House Cars With End Ladders (Iron).
Box and Other House Cars With Side Ladders (Wood).
Box and Other House Cars With Side Ladders (Iron).
Drop End Gondolas; End Handholds on Under Side of End Sills.
Drop End Gondolas; End Handholds on Face and End Sills.
Fixed End Gondolas; Low Car With Brake Step.
Fixed End Gondolas; Low Car Without Brake Step.
Fixed End Gondolas; High Cars With Single Side Handholds.
Fixed End Gondolas; High Cars With Side or End Ladders.
Tank Cars; With Side Platforms and Safety Railings.
Tank Cars; With No End Sills.
Tank Cars; With No Side Sills, High Running Boards.
Flat Cars; End Handholds on Under Side of End Sills.
Flat Cars; End Handholds on Face of End Sills.
Hopper Cars.

Pages 636 to 644, inclusive, Sheets M. C. B. Nos. 19 to 19-P, inclusive.

33. A member suggests that all ladders, grabirons, handholds and steps be secured by through bolts or rivets.

Suggestion referred to Safety Appliance Committee.

Passenger Car Pedestal for Journal 4¼ by 8 Inches, Changed from Recommended Practice, 1901.

Page 644, Sheet M. C. B. No. 20.

34. Committee recommends no changes.

Journal Box and Contained Parts for Journal 4¼ by 8 Inches for Passenger Cars, Changed from Recommended Practice, 1901.

Page 609, Sheet M. C. B. No. 21.

35. A member suggests the introduction of dimensions to lip on top of box that fits groove in equalizer.

Secretary is requested to search records of original report of committee and insert dimensions. If not shown, insert according to scale.

Center Plate.
Arch Bars and Column Bolts for 80,000 Pounds Capacity Cars.
Standards for Iron Brake Beam.
Gages for Brake Beam and Head Lever.
Pine-hole Gage.

Pages 613, 614, 644 and 645, Sheet M. C. B. No. 22.

36. A member suggests the substitution of one beam of 10,000 pounds capacity with $^1/_{16}$-inch deflection to cover all classes of freight cars.

Suggestion not approved by committee.

37. A member suggests that uniform practice be established for designating right and left hand brake beams.

Committee concurs in this and recommends the following: When facing back of brake beam, with center strut pointing away from observer, where the top of lever slot inclines toward the right, shall be known as right-hand brake beam; and where top of lever slot inclines toward the left, shall be known as left-hand brake beam.

38. A member suggests change on cut to show single nut with lock washer, or nut lock, eliminating use of second nut and cotter on column bolts.

This suggestion referred to Committee on Freight Car Trucks.

Journal Bearing and Wedge Gages for Journals 3¾ by 7 Inches, 4¼ by 8 Inches, 5 by 9 Inches and 5½ by 10 Inches.

Page 609, Sheet M. C. B. No. 23.

39. Committee recommends no changes.

Sheathing, Flooring, Roofing and Lining.
Marking of Freight Cars.

Pages 645 and 646, Sheet M. C. B. No. 24.

40. W. F. Allen, Secretary of the A. R. A., transmits the following:

"*Resolved*, That the Master Car Builders' Association be requested to formulate a rule providing for a standard marking of the lengths of flat cars to cover the total length over end sills. In cases of drop-end cars, they shall be stenciled with inside length and total length over end sills."

Committee recommends letter ballot on the following:

First.—Stencil flats with length of car over end sills, measured at side of car, which is equivalent to the total length of level floor space available for loading.

Second.—Stencil drop-end gondolas with length of car over end sills, measured at side of car, which is equivalent to the total length of level floor space available for loading.

Third.—Stencil drop-end gondolas with length of car inside of drop-end doors.

41. A member suggests cuts showing marking of freight cars be enlarged and that larger type be used for descriptive matter.

Committee concurs in this recommendation.

42. A member suggests the introduction of 2⅜-inch tongue and grooved flooring with tongue located $1^{13}/_{32}$ inch from top.

Suggestion not approved by committee.

43. A member suggests changes in location of tongue and groove on sheathing, roofing and lining, whereby the tongue would be tight on back face, instead of on front face of groove.

Suggestion not approved by committee.

44. Inasmuch as a number of roads throughout the country use fluted roofing, this committee suggests that a special committee be appointed to investigate and submit recommendations.

45. This committee suggests the introduction of 2⅜-inch flooring (finished size), ship-lapped, tongue and grooved, and square edge, to present standards and that same be shown on Sheet M. C. B. No. 24.

Loading Long Material on Open Cars.
(For additional information see Sheets 25-A and 25-B.)
Loading Long Materials on Open Cars.
(For additional information see Sheets 25 and 25-B.)
Loading Materials in Closed Cars.
Loading Long Materials on Open Cars.
(For additional information see Sheets 25 and 25-A.)

Page 651, Sheets M. C. B. Nos. 25, 25-A and 25-B.

46. Committee recommends no changes.

RECOMMENDED PRACTICE.

Marking of Freight Cars.
Collection of Salt Water Drippings.
Minimum Thickness of Steel Tires.
Manner of Taking Borings for Analysis of Axles.
Permanent Safety Chains for Wooden Underframe Freight Cars.
Permanent Safety Chains for Steel Underframe Freight Cars.
Temporary Stake Pockets for Gondola Cars.

Pages 682 and 683, 684 and 685, 687 and 688, Sheet M. C. B.—A.

47. A member suggests that cut showing collection of salt water drippings be omitted.

Referred to Committee on Salt Water Drippings from Refrigerator Cars, with advice that this committee does not concur.

48. A member suggests certain changes relative to minimum thickness of tire at throat and location of limit groove on steel-tired wheels.

This suggestion referred to Wheel Committee.

Arthur Hale, of the American Railway Association, and G. P. Conard, of the Association of Transportation and Car Accounting Officers, suggest the following:

Paragraph No. 1.

Freight equipment cars that have superstructure which will permit should be stenciled with markings on sides of car in the following order:

Lettering (initial and name of road).
Number.
Capacity.
Light Weight.

This marking on house, stock and high-side gondola cars is to be located as nearly over the truck as possible on left side of center line of side of car (excepting on box and house cars where the doors slide to the left and lettering is longer than 9 feet, it may be placed on right side of center line of car).

The distance from the center line of coupler to the bottom of car number to be normally 2 feet 4½ inches, with a minimum dimension of 1 foot 10½ inches, and a maximum of 2 feet 10½ inches. The spacing of the remaining markings to be as shown on diagram. Above the initial or name and below the number shall be placed a line to indicate clearly these identification reporting marks.

Paragraph No. 2.

The ends to show the initial or name of road, car number and light weight in the upper half of end of car on house, stock and fixed high-side gondolas. Box and other house cars having end doors should have this lettering so located that it will not be obscured when doors are opened. Above the name or initial and below the number shall be placed a line same as on side of cars. Place to be changed to conform to text.

Committee concurs in this suggestion.

Automatic Coupler Attachments.
Uncoupling Attachments.
Temporary Chains for Double Loads.
Page 681, Sheet M. C. B.—B.

49. A member suggests the introduction of Carmer coupler release attachment.

This suggestion referred to the Executive Committee.

50. A member suggests that if this sheet relating to automatic coupler attachments is to remain as Recommended Practice, there should be some text showing by what authority it is so recognized.

Committee suggests that Secretary of the association locate authority and insert same on sheet.

51. A member suggests that a better method be adopted for securing lugs against coupler butts.

This suggestion is referred to the Coupler Committee.

Journal Box for Passenger Cars, Journal 5 by 9 Inches.
Page 687, Sheet M. C. B.—C.

52. Committee recommends no changes.

Steam and Air Line Connections.
Passenger Car Pedestal for Journal 5 by 9 Inches.
Steam Hose Coupling.
Combination Lamp Holder and Flag Brackets.
Page 687, Sheet M. C. B.—E.

53. A member suggests changing opening in pedestal jaws to conform to 9-inch width of box, as shown on Sheet M. C. B.—C.

Committee suggests to the association that, as the pedestal and 5 by 9 inch box do not correspond in dimensions, the recommendations made by last year's committee be considered and again referred to letter ballot.

Box Car Side and End Doors.
Page 687, Sheet M. C. B.—F.

54. A member suggests the elimination of this sheet, as fixtures shown thereon are obsolete.

This suggestion is referred to Committee on Side and End Door Fixtures.

Location of Air Brake Parts on Wooden Cars; Twist Gage for M. C. B. Couplers; Splicing of Sills.
Page 688, Sheet M. C. B.—G.

55. A member raised the question as to forms of splicing sills being patented.

As a legal question is involved, this committee referred the suggestion to the Executive Committee for a reply.

56. A member suggests adding on cut showing sill splicing, arrow pointing to end of car.

The cut showing splicing of steel sills would be made clearer if sections of end sill were shown, and committee recommends this change as per print attached.

57. A member suggests that text be brought up to date, to show that air brake appliances shown on this sheet apply to wooden cars only.

Committee concurs, and suggests that text be changed to conform to plate, by addition of paragraph on page 670, indicating that the appliances are for wooden cars only.

58. A member suggests that a new sheet be introduced, showing design of air brakes on steel and steel underframe cars, and on sheet show clearly location of angle cock at end of car.

This suggestion is referred to Committee on Train Brakes and Signals.

Springs and Spring Cape for Freight Car Trucks.
Page 687, Sheet M. C. B.—H.

59. A member calls attention to the fact that dimension of free length on spring "G" is very indistinct.

Committee requests Secretary to check up original report and insert correct and legible dimensions on springs "E," "F" and "G."

Drop Test Machine for M. C. B. Couplers.
Drop Test Machine for Knuckle Pivot Pins.
Page 688, Sheet M. C. B.—I.

60. Committee recommends no changes.

High Speed Foundation Brake Gear for Passenger Service.
Schedule for 6-Wheel Trucks.
Cast Iron Wheels.
Limit Gage for Remounting Cast Iron Wheels.
Page 658, Sheet M. C. B.—J.

61. A member suggests that cuts of wheels be placed on another sheet, and to larger scale.

Committee concurs in this suggestion.

High Speed Foundation Brake Gear for Passenger Service.
Schedule for 4-Wheel Trucks.
Framing of Box Cars.
Pages 678 to 685, Sheet M. C. B.—K.

62. Committee suggests no changes.

High Speed Foundation Brake Gear for Passenger Service.
Schedule for 4-Wheel Trucks.
Page 678, Sheet M. C. B.—L.

63. Committee suggests no changes.

Lettering for Freight Cars.
Pages 686, 687, Sheet M. C. B.—M.

64. Committee suggests no changes.

Limit of Wear on Axles.
Page 481, Rule 23.

65. A member suggests certain changes in limits of axles suitable for 65,000 pounds capacity cars, and another member makes same suggestion to apply to cars of 90,000 pounds capacity.

Committee recommends the appointment of a special committee to investigate and submit recommendations indicating changes that may seem desirable, if any.

Revision of Specifications for Steel Axles.
Pages 653 to 656, inclusive.

66. Committee recommends to the association that a special committee be appointed to most carefully investigate and submit revised specifications for steel axles, as present specifications were adopted as Recommended Practice in 1899, and changes in conditions now warrant revision.

Test of Knuckle Pins.
Page 657.

67. A member suggests that weight of drop at a 3-foot height be shown.

Committee concurs and would suggest that second line from bottom of page be amended as follows: "To be subjected to a blow by the weight 1,640 pounds falling a height of 3 feet."

Specifications for 33-Inch Cast-iron Wheels.

Page 658.

68. A member suggests that the weight of cast-iron wheels be increased 15 pounds each.

This suggestion is referred to the Wheel Committee.

Cleaning Air Brakes.

Page 674.

69. A member suggests that Recommended Practice covering the cleaning of air brakes be advanced to Standard, and diagram of triple valve test rack modified to care for testing of "K" and other late types of triples.

This suggestion is referred to Committee on Train Brakes and Signals.

Cleaning and Inspection of Brake Cylinders.

Page 676.

70. A member suggests change in second paragraph, under this subhead, to conform to Rule 31 of the Code, to provide stenciling of date, etc., for cleaning and test in a convenient location, at release rod when the cylinder or reservoir is not easily seen.

Committee concurs in this suggestion.

Mounting Wheels.

Page 682.

71. A member suggests certain changes in gages for wheel mountings.

This suggestion is referred to the Wheel Committee.

72. A member suggests a committee be appointed to establish wheel mounting pressures for various sizes of axles and kinds of wheels.

Minimum Thickness of Steel Tires.

Page 682.

73. A member suggests change in thickness of tires and location of limit groove on steel-tired wheels.

This suggestion is referred to Wheel Committee.

Air Brakes—General Arrangement and Details.

Page 615.

74. A member suggests that maximum brake power in freight cars of 70 per cent. light weight of car be increased to 80 per cent.

This suggestion referred to Committee on Train Brakes and Signals.

Spacing Between Center Sills.

Page 624.

75. A member suggests that the spacing between center sills be about 13⅝ inches, and 12⅞ inches between draft timbers.

Committee recommends no change in present practice.

Journal Box and Details, 5 by 9 Inches.

Page 608.

76. Last paragraph, page 608, now reads, "In 1908, the center of box from which the lower half of circle is struck was raised ¼ inch, increasing depth to 1⅝ inches." This should read, "The center from which lower half of circle is struck," etc.

Specifications for Air Hose.

Page 618.

77. In paragraph 6, reference is made to inside diameter of hose being $^{17}/_{16}$ inch. This should be $1^{7}/_{16}$ inches.

Platform Safety Chains.

Page 684.

78. Chain dimension 2¾ inches from face of end timber to bearing point of eye is shown. This should be 12¾ inches.

79. A member suggests that no freight cars of less than 30 tons be accepted in interchange after January 1, 1910.

Committee does not concur, but suggests the appointment of a special committee to investigate and report on the subject of minimum strength of center sills, draft appliances and trucks of cars offered in interchange.

80. The committee considered at length the question of plates, text, index, etc., in the Proceedings as published in recent years. They most urgently recommend that all M. C. B. sheets, both Standard and Recommended Practice, be revised and enlarged; that the descriptive matter be made legible and that sheets appear in regular order. They further recommend that text be most carefully revised and that all descriptive matter appear in consecutive order, corresponding with sheets. They further recommend that index be carefully revised, so that all items will be covered. The expense incident to these revisions will at this time be warranted, as much adverse criticism is now made to the lack of completeness and arrangement of the published proceedings.

MINORITY REPORT.

The following paragraphs of the report of the majority of the Committee on Standards and Recommended Practice have my approval: 1, 2, 3, 4, 5, 6, 6-A, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78 and 79.

I do not concur in the report of the committee of the majority on the following questions, Nos. 40 and 48, and, therefore, submit a minority report for the consideration of the members, as follows:

Standard Sheathing, Flooring, Roofing and Lining. Standard Marking of Freight Cars.

Sheet M. C. B. 24, Pages 645 and 650.

Would recommend letter ballot on the following:

First: Stencil flats with length of car over end sills at center.

Second: Stencil drop-end gondolas with length of car over end sills at center.

Third: Stencil drop-end gondolas with length of car inside of drop-end doors at center.

(Explanation.) It has been customary on most railways to measure the length of cars over end sills or buffer beam at the center of the car on account of the varied end constructions. The recommendation of Mr. Arthur Hale, chairman of the Committee on Car Efficiency, relative to the marking of flat cars and drop-end gondola cars with the total length of level floor space available for loading and that this length should be measured over end sills at the side of car, I would state does not indicate to the shipper more clearly the length of load that can be placed on the car than would the measurement over end sills at the center of the car for the reason that all loads must clear the brake staff by six inches, which, after all, is the governing feature. I would, therefore, recommend that these questions be submitted to letter ballot as outlined above.

Marking Freight Equipment Cars.

M. C. B. Sheet A, Page 686.

Would recommend that we do not concur in the suggestion brought forward by Mr. Hale and Mr. Conrad.

(Explanation.) The questions in regard to the standard marking on freight cars were carefully considered by a special committee of the M. C. B. Association, who reported to the last convention (See 1908 Proceedings, Pages 258 to 266) and their recommendations were adopted by letter ballot as Recommended Practice.

This special committee held joint conference with members of the committee of the Association of Transportation and Car Accounting Officers, and after due consideration it was not deemed advisable to incorporate the heavy lines painted above the initials or name of road and below the number. Neither did they feel that it was obligatory or necessary to confine the stenciling of the initials or name of road and number, on the side of the car, to the left hand side. The initials or name of road and the car number are now provided for to be placed in large letters and numerals on the sides and ends of car so that they can be readily distinguished from the other markings, and, therefore, I consider the underlining as a requirement entirely unnecessary.

In regard to confining the marking of the initials or name of road and number to left side of the side of car I would

state that this would work a hardship on the roads on which the doors slide to the left, and inasmuch as such marking cannot be universally carried out on all types of equipment, railroads should not be compelled to adhere to this proposed suggestion.

The relocation of lettering on cars from a drawing-room standpoint alone involves a considerable expense, to say nothing of the changes that must be made in the stenciling on the equipment. Railroads, as a rule, have had, for years, a certain marking as a standard, and while the necessity of bringing such markings within the line of sight is obvious (this the special committee covered last year and is now a Recommended Practice), I do not believe that any further change should be made at this time, for which reason I recommend that we do not approve of this suggestion.

R. L. KLEINE.

TESTS OF BRAKE SHOES.*

The outline of work proposed by the committee for the year 1908-09 was as follows:

1. To hold a meeting not later than October 10 at some point such as Cleveland, Indianapolis or Chicago, where considerable numbers of freight cars are handled. To select from freight cars, in co-operation with local railway officials, not less than 20 partially-worn shoes. In making a selection the committee to seek to secure shoes which are representative of those used by the railways of the country. The shoes selected to be numbered, and the terms to be employed in designating them be determined by the committee prior to its adjournment.

2. Of the 20 shoes selected, 10 to be sent to the American Brake-Shoe Company in care of F. W. Sargent, Consulting Engineer, with the request that said company test them for the committee. Ten shoes to be sent to the Master Car Builders' Laboratory, Purdue University, in care of Dean C. H. Benjamin, to be tested under the immediate direction of the committee.

3. Each shoe to be tested upon a cast iron wheel and upon a steel-tired wheel. Each shoe to be tested, first, under the Master Car Builders' specifications governing frictional qualities, after which it is to be tested to determine its wearing qualities under the code proposed by the committee in its report to the association in June, 1908.

4. Following a suggestion of the committee at the last convention to the effect that provision should be made for determining the wearing effect of the brake-shoe upon the wheel, the William Sellers Company, of Philadelphia, has been requested to outline a simple form of weighing lever of sufficient capacity to handle a car wheel, and of such delicacy as will serve to detect differences in weight as small as $^1/_{500}$ of a pound. It is hoped that by the aid of such a device, weighings can be made of the test wheel before and after the wearing test of each brake-shoe, and that the loss of weight sustained by the wheel in the process may be determined with a sufficient degree of accuracy to disclose the rate of wear of the shoe upon the wheel. If the Executive Committee should think it wise to add to the equipment of its laboratory such a weighing device, the committee will make its study of the 20 shoes selected for test include a study of the wearing effect of these shoes upon the wheels to which they are applied.

The authorities of Purdue University agree to receive and to install the proposed weighing device in case the Executive Committee see fit to provide for it.

5. At the conclusion of the work outlined in the previous paragraphs, all results of tests, both those obtained by the American Brake-Shoe Company and those obtained by the committee at the laboratory at Purdue University, are to be brought together into one complete record. Upon the facts presented by this record, it is proposed to base a formal specification covering the wearing qualities of brake-shoes. The committee may also consider whether there should be any change in the present specifications governing frictional qualities.

Proceeding under this program, the committee in January personally selected 14 brake-shoes from cars in service in the Chicago yards of the Chicago & North Western; and by the aid of others it has since received 14 additional shoes also taken from cars in service. These 28 shoes are of 14 different kinds, each kind in duplicate. They have been selected as representative of brake-shoes now in use by the railways of the country. It is proposed that these shoes be subjected to the tests outlined above.

The committee now considers its principal work to be the determination of the wearing qualities of shoes and the determination of the effect of the shoe upon the wear of the wheel. The determination of wheel wear requires a weighing device of unusual sensitiveness. A scale for this purpose was ordered from the William Sellers Company but it has not yet been delivered. As a consequence it has been impracticable to proceed in the working out of the program. The delay in the manufacture of this apparatus has grown out of the fact that the problem of constructing a device of sufficient capacity to receive a car wheel and sufficiently sensitive to detect differences of one five-hundredths of a pound has proved more difficult than was anticipated, and changes in the preliminary design have been necessary. Responsibility in all such matters is with the manufacturer, and the committee finds satisfaction in assurances received that the completed scale will soon be delivered.

The committee asks that it be continued for one year, and that its budget, already approved, be allowed to stand, all in the expectation that its program of work can be completed prior to the 1910 convention.

The chairman of the Brake-Shoe Committee would add some specific reference to the work of his colleague of long standing, George W. West, who died during the year now closed. Mr. West had his full share in the framing of the present program and in the discussions and labors preliminary thereto. His service on the Brake-Shoe Committee has always been one of great faithfulness, and even during the last two years, when his strength was seriously impaired, he never failed to return a prompt response to an inquiry, nor hesitated to undertake a journey when his membership on the committee made such a course desirable.

The appointment of William McIntosh to succeed Mr. West as a member of the Brake-Shoe Committee is accepted by the colleagues of the late Mr. West as evidence that the working strength of the committee is to continue unimpaired.

*Report presented at the annual convention of the Master Car Builders' Association. Committee: W. F. M. Goss (chairman), B. D. Lockwood, William McIntosh.

TRAIN BRAKE AND SIGNAL EQUIPMENT.*

Last July the name of the Committee on Air Brake Tests was changed to Train Brake and Signal Equipment, the personnel of the committee being somewhat changed.

It was decided to increase the scope of the committee's work to take in the entire subject of air brake and signal equipment of cars for both automatic and foundation brakes.

In addition to the above duties the following subjects were referred to the committee for consideration and report at the 1909 convention:

(A) To design a standard brake shaft, brake wheel, brake-wheel fit, ratchet wheel and ratchet-wheel fit.

(B) A uniform method of fastening brake wheel and ratchet to staff, the brake shaft to be made of one piece.

(C) Location of the attachment of the brake chain to the winding barrel.

(D) To propose sizes for rods and other details of foundation brake gears to suit the different types of air-brake equipment.

(E) Increase in size of brake chain and bolt fastening the chain to brake staff.

(F) The question of ball joint unions and the interchangeability of parts.

The new 100-car triple valve test rack for 10-in. freight equipment which was authorized to be erected at Purdue University, Lafayette, Ind., is now installed in a new building provided for that purpose by Purdue University.

One of the Principal duties assigned to the committee is the formulation of a revision of the present code of tests for triple valves. This subject has been taken up with the various air brake manufacturers, but we regret to report that on account of the inability of more than one manufacturer to furnish triple valves in time for such tests, the committee is unable to submit a revision code for the 1909 convention, and would ask that further time be given to consider this subject.

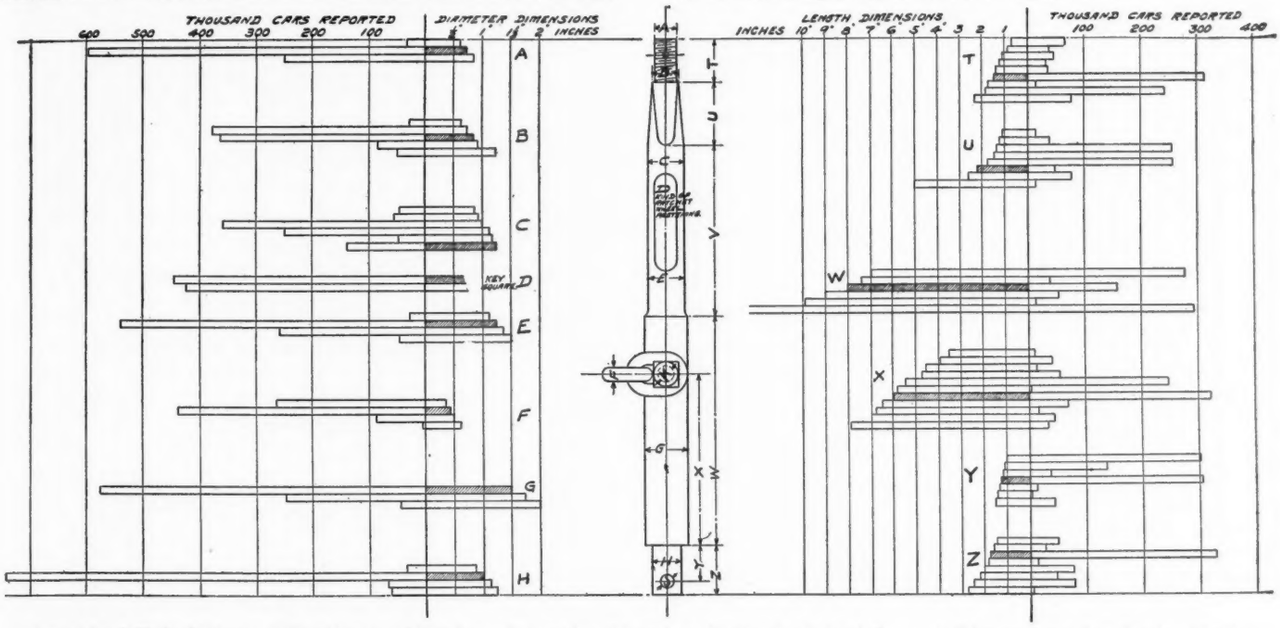
A circular of inquiry was addressed to the members asking for certain information concerning the present practice regarding brake shafts and their attachments, and replies received represented over 38 per cent. of the total number of cars represented in the association. When these replies were received and tabulated there were found to be such marked differences in the dimensions that no definite decision as to the proper dimensions could be arrived at without arbitrarily taking dimensions which would represent the greatest number of cars interested. This is what the committee has done, and the dimensions decided on are shown by the cross-hatched sec-

*Report presented at the annual convention of the Master Car Builders' Association. Committee: A. J. Cota (chairman), F. H. Scheffer, R. K. Reading, E. W. Pratt, R. B. Kendig, T. L. Burton, E. Posson.

tion under "length dimensions" and "diameter dimensions."

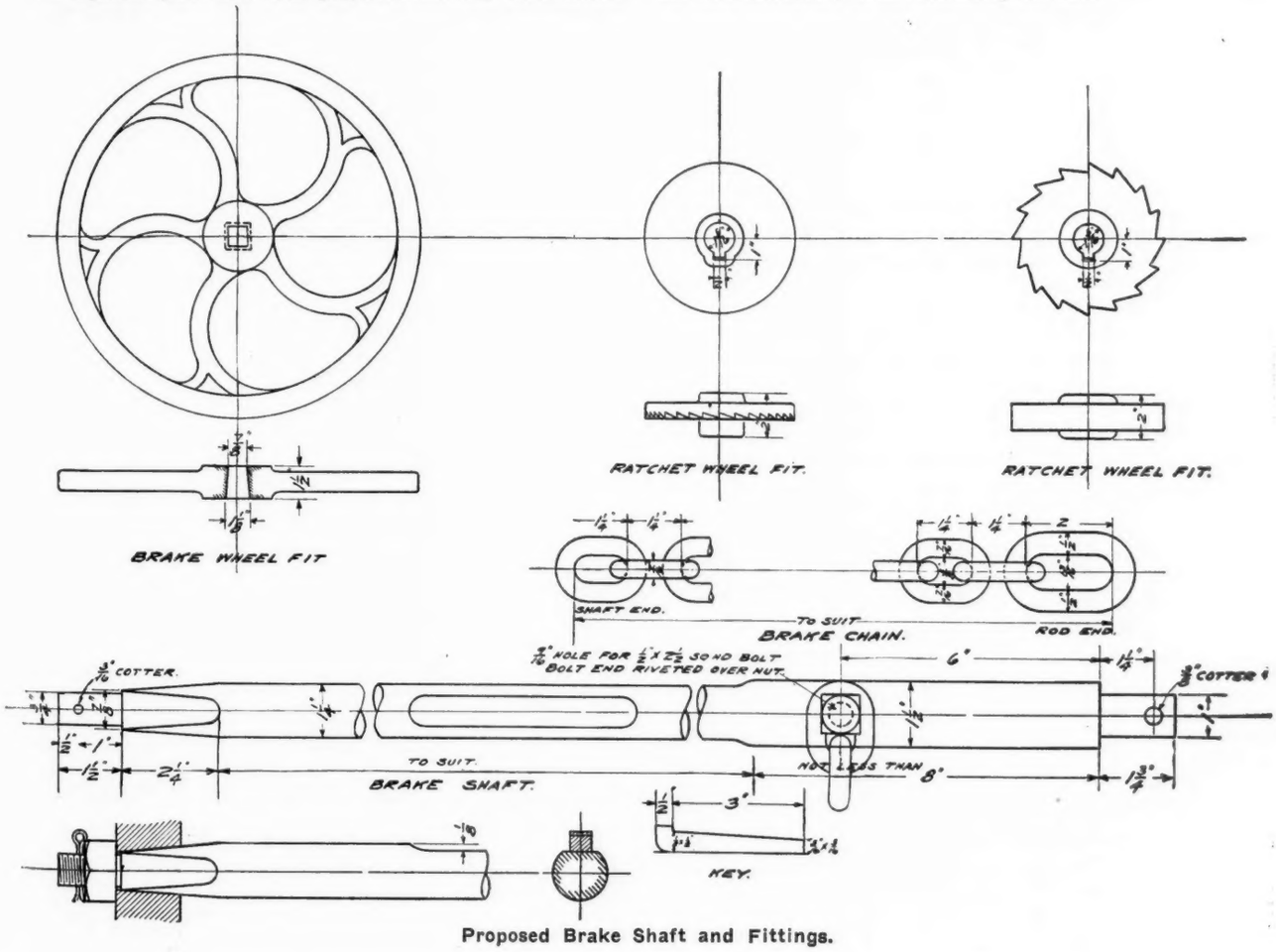
Regarding the brake-wheel fit, there was even more difference than with the brake mast. The maximum and minimum length of hub reported and the maximum and minimum size of hole reported are shown in the composite sketch. The wheel fit decided on by your committee is shown by the full cross-hatched section.

A separate plate has been prepared showing recommendations for the brake shaft, brake chain, manner of fastening brake chain to brake shaft, size of wheel fit for brake wheel, brake shaft, and a size and form of fit for ratchet wheel and a key for securing ratchet wheel to brake shaft.



Graphical Tabulation of Replies to Circular of Inquiry Showing Method of Arriving at Dimensions for Brake Mast.

The committee recognizes that these dimensions are more or less arbitrary, on account of the manner in which they were obtained, and would recommend their use only on new cars to be built hereafter, or in rebuilding old cars.



Proposed Brake Shaft and Fittings.

On account of the great difference and variety of ratchet wheels, the committee is not at this time able to recommend any more than the shaft fit in the ratchet. The same can be said about the form and diameter of brake wheel, and the committee did not deem it as being of sufficient importance to arbitrarily make a design for the acceptance of the association.

The question of sizes for rods and other details of foundation brake gears to suit the different types of air brake equipment was raised principally from the extensive use of the 10-in. brake cylinder. During the transition period your committee thought best not to work over the several details, but instead to add a note under "levers and connections," Sheet M. C. B. 9, stating that for brake cylinders larger than 8 in. or for brake cylinder pressures above 50 lbs. per square inch, the size of brake rods and brake levers shown should be increased, if necessary, so that the fiber stress shall not exceed 15,000 lbs. per square inch for rods and 23,000 lbs. per square inch for levers.

A suggestion from the Committee on Standards was to consider the question of discontinuing the use of malleable iron material for bottom or truck lever connections. The committee recommends the erasure from Sheet M. C. B. 9 of all reference to malleable iron construction, leaving the alternate note in force, namely, that the truck connections be made of round iron or steel not less than 1⅝ in. in diameter.

As to the question of ball joint unions and the interchangeability of parts, the committee is not prepared to report and asks for further time.

The committee would suggest that the recommendations made herein be submitted to letter ballot for adoption as standard.

RECORD FREIGHT TRAIN HAUL ON THE PENNSYLVANIA.

On June 17 the Pennsylvania made a record freight train haul with one of its new standard H8 consolidation locomotives, on the middle division, from Altoona to Harrisburg. The train was composed of 85 standard 100,000-lb. steel hopper coal cars loaded with 4,451 tons of coal, the total weight of the train being 6,151 tons. The run of 124 miles was made in 6 hrs. 54 mins., or approximately 17 miles an hour. The H8 consolidations are an improvement on the H6 class, having 24-in.x28-in. cylinders, 62-in. drivers, and carrying 205 lbs. steam pressure, the traction power being 43,000 lbs. The engine making the run was No. 1113.

COUNTRY CLUB ENTERTAINMENT.

The entertainment committee has arranged for the entertainment of the ladies at the Atlantic City Country Club on Tuesday afternoon. While arrangements have been made for the trip to the club by trolley, there will be in commission two sight-seeing automobiles, capable of carrying about 25 or 30 ladies each. These will leave the entrance of the Blenheim at 2:30 and return so as to reach the hotel about 5:30. A program of entertainment at the club has been arranged, consisting of clock golf, cards and a variety of other amusements. The orchestra will accompany the party and be on duty during the afternoon. It is desired that as many ladies as possible avail themselves of this opportunity. In case more desire to go than can be carried in the autobiles, the arrangements originally made in regard to special trolley cars will still hold and provide for the overflow.

One of the largest representations at the conventions is that of the Galena-Signal Oil Company. It includes S. A. Megeath, first vice-president and general manager; E. V. Sedgwick, manager mechanical expert department; H. Hillyer, secretary mechanical expert department; J. A. Whalen, J. W. Bunn, Lewis Gleason, William Taylor, W. E. Brumble, D. J. Justice, J. F. Gettrust, A. B. Wright, G. E. McVicar, C. B. Royal, E. W. Hayes, C. C. Steinbrenner, F. A. Guild, M. J. Hurley, J. S. Patterson, W. J. Walsh, Alex Turner, Robert McVicar, B. H. Grundy, E. H. Baker, George L. Morton, E. W. Grieves, W. A. Trubee, J. A. Wilson, W. O. Stieff, J. A. Linahen and C. H. Clark.

Conventionalities

The editor wrote better than he knew when he likened the performing seals to the blower-and-ball exhibit of the American Blower Company. The balls used by the seals in performing balancing stunts on their whiskers are real "Sirocco" balls, and though the seal's breath is not quite as powerful as the blast from the blower, the performance makes a pretty successful imitation.

S. D. Anderson, New York representative of the Standard Railway Equipment Company, accompanied by Mrs. Anderson, is at the conventions as usual.

A prominent S. M. F. in the West has gone into the hat making business. He has two living models (not beauties) at Atlantic City in the persons of Walter Leach and Frank Barbey. They have been authorized to take orders for hats at $10 each, and their joint contract provides for a commission of $9 on each hat. The balance is forwarded to the S. M. P., who states that the margin provides for a small profit.

A pleasant group of people of similar tastes and interests is formed by N. S. Reeder, general manager Canada Car Company, who is at the Marlborough-Blenheim with Mrs. Reeder; L. O. Cameron, manager of sales of the Pressed Steel Car Company for the southern district, who, with Mrs. Cameron, is at the Brighton; J. H. Mitchell, manager of sales for the western district for the same company, who is at the Marlborough-Blenheim, but without Mrs. Mitchell, and C. D. Terrell, assistant manager of sales for the southwestern district. There is no Mrs. Terrell.

E. W. Pratt, assistant superintendent of motive power and machinery, Chicago & North Western, is staying at the Marlborough-Blenheim. He is accompanied by Mrs. Pratt and their daughter.

From official figures it is learned that there have been received on the pier for exhibit purposes, 1,440,347 lbs., or 720 tons of freight, in addition to 20 tons of freight delivered by express. In 1908 there were 432 tons of freight delivered for the same purpose. Owing to the meeting of the National Electric Light Association immediately preceding these conventions, it was necessary to handle and install this amount of freight and express matter within the period of eight days.

George Gray, of Peter Gray & Sons, Boston, is missed from the conventions this year. It is stated that the cause is the opening of the firm's new factory. The company is represented by Mason Gray, who is here with Mrs. Gray and J. M. Brown, western representative, and Mrs. Brown.

S. M. Rogers, purchasing agent of the Elgin, Joliet & Eastern, is a visitor at the conventions.

This is P. H. Wilhelm's nineteenth convention. He now represents the Asbestos Protected Metal Company, but in the course of his long experience he has sold Hien, Buhoup and Washburn couplers, pneumatic tools, gages and valves, tie-plates, etc., covering a variety of experiences not known to many supply men.

P. P. Sturdevant, of the mechanical engineering department of the American Car & Foundry Company, came to the convention Saturday with Mrs. Sturdevant and will remain during the M. C. B. meeting.

F. O. Ketcham, of E. L. Post & Co., Inc., New York, brought Mrs. Ketcham to the Convention, as usual. Also, as usual, he is saying things about "Zero" and "Motor" metal to anyone interested in bearing metal. Again, as usual, he has no exhibit.

The many friends of W. E. Fowler, past president of the Master Car Builders' Association, will regret to learn that he

has been obliged to resign his position as master car builder of the Canadian Pacific on account of ill-health. It will be remembered that Mr. Fowler has been obliged in the last few years to undergo several operations and he is now suffering from neuritis as a result. It is understood that he expects to spend some time abroad at some health resort.

A very enjoyable entertainment was the recital given on Thursday afternoon by Mary Jordan Fitz-Gibbon at the Marlborough-Blenheim. Mrs. Fitz-Gibbon is a member of the quartet of the Lafayette Avenue Presbyterian Church in Brooklyn and has given concerts in many cities as well as at these conventions last year. Mrs. Charles P. Storrs was the accompanist and by her skill at the piano added greatly to the success of the entertainment. The programme included the following:

"Many Dreams" ..... Sinding
Away on the Hill ..... Ronald
Gae to Sleep ..... Fisher
Aria from Don Carlo, "O, Don Fabale" ..... Verdi
Ich dachte dein ..... Helmund
Du bist wie eine Blume ..... Burnham
Zueignung ..... Strass
The Bondmaid ..... Lalo
When Maidens Go A-Maying ..... German
Little Fidget ..... Hildach
My Star ..... Beach
Come, My Own Dear Love ..... Chaminade
In Moonlight ..... Elgar
The Nightingale ..... Stephens

THE CORNELL DINNER.

At the Cornell dinner on Saturday evening about thirty-five former Cornell men were present. Dean Smith of Sibley College, was the guest of honor. The evening passed pleasantly in an exchange of reminiscences, to which B. P. Flory, L. A. Shepard, Prof. H. Wade Hibbard, formerly of Sibley College, but now of the University of Missouri, and others contributed. These little impromptu reunions during the conventions have become so popular among the college men that they are becoming an increasingly attractive feature, and it is unlikely that they will soon be abandoned.

PURDUE DINNER.

Purdue University men in attendance at the conventions had a dinner on Saturday evening at the Shelburne. In addition to those who had registered at the *Daily Railroad Age Gazette* booth, several alumni connected with the Pennsylvania Railroad came to Atlantic City for the occasion. No business was transacted beyond an informal agreement to get together in the same way at subsequent conventions.

C. D. Jenks, the "Bonnie Prince Charlie," of the Pressed Steel Car Company's aggregation, has at last arrived. He lives at the Marlborough-Blenheim.

"Where's Bankard?" Everyone connected with the Baltimore & Ohio has been asked this question several times during the last week. Bankard has come and now the proceedings may proceed.

These are the first M. M. and M. C. B. conventions which F. C. Kenly, assistant general manager of the Curtain Supply Company, Chicago, has attended. Mr. Kenly has taken great interest in the proceedings, the exhibits and the various social affairs.

M. J. Murphy, formerly with Baeder, Adamson & Co., was at the pier for a day or two looking for his friends. He is now with the hair felt department of H. W. Johns-Manville Company.

H. L. Mills is still here talking the "Use-'Em-Up" language, so peculiar to the drill sockets of the American Specialty Company. Mr. Mills is staying at Haddon Hall.

P. L. Rhodes, who is stopping at the Isleworth Hotel, has been spending most of his time telling folks about the good qualities of the Homestead valve.

W. S. Humes, of the General Railway Supply Company, Chicago, says that he has the finest free cigars on the pier. They are in no sense souvenirs, but are being dispensed inside the stub-end of the vestibuled coach to demonstrate the action, within the car, of the air currents, due to the Garland ventilators.

Mr. and Mrs. J. F. Graham will not be seen in Atlantic City by their many friends during the present conventions. Mr. Graham is extremely busy with his duties as superintendent of motive power of the Oregon Railroad & Navigation Company at Portland.

C. B. Denny, the useful as well as ornamental treasurer of the American Locomotive Company, got to Atlantic City Thursday night, but he got a tip and had to hurry back to New York Saturday to take care of the drafts of the many other representatives of the concern who are whiling away their time at the convention.

Walter E. Coffin, of the National Coupler Company, came up from Mexico to be with his friends here. As a matter of fact, he never misses these meetings except when he happens to be in Japan, China, South Africa or Central Asia in June. The easiest way to find the North Pole would be to pass the word around that Peary is in the market for couplers. Then you would see Coffin get busy and he would either find the Pole as a side issue in looking up Peary or the smile he always has with him would melt the ice caps and it would be a cinch for Peary himself.

When the good ship "Princeton," of the Atlantic City fleet, Captain George B. Gale commanding, set sail from Absecon Inlet on Saturday morning there was so little breeze that for a time it was feared the cruise would be a failure. She had on board, in addition to the crew, one of whom had served for three years on the U. S. ship "Mayflower," and who displayed the agility acquired in the strenuous life by frequent trips to the masthead, seven ladies, several representatives of the Diamond Rubber Company, by whom the ship was chartered for the voyage, one professor and eight representatives of the *Daily Railroad Age Gazette*. Soon, however, a breeze sprang up and increased in intensity until every inch of her immense sails was strained to the limit, the spray dashed over her bow and the lee gunwale was under water. Simultaneously with the breeze appeared, as if on a starting line, the sloop "M. S. Quay, 2d," an uncompromising rival of the "Princeton," which now holds the championship of these waters, and a race was on. With tense muscles and flashing eyes Captain Gale gave short, incisive orders, every lift was tightened and the ship held up to the wind until she was skimming over the waves at a marvelous rate of speed. With such a vessel and such seamanship there could be but one result.

Seven miles out at sea the "Princeton" was flapping her orange and black flag far in lead of her rival and on turning showed a clean pair of heels until the "Quay" hauled in her sails and gave up the race. As the event was wholly unexpected, no arrangements had been made for taking accurate account of time or distance, but the result was so clear as to leave no doubt as to the worthiness of the "Princeton" to hold the championship. Moreover, the combination of the Diamond Rubber Company and the *Railroad Age Gazette* is an unbeatable one on water or on land.

For popularity among the younger supply men none can excel Charlie Bieder, who for the past two years has traveled throughout the southern states promoting the sale of the products of the National Malleable Castings Company. All the younger ladies at the convention are a unit in saying that if Charlie sells couplers as gracefully as he dances his

success is assured. Charlie paraded the Boardwalk Sunday in a natty white serge suit.

David Brown, assistant superintendent of motive power, Delaware, Lackawanna & Western, with Mrs. Brown, is stopping at the Strand. Their daughter, who usually attends the conventions, is not with them this year.

W. H. Lewis, superintendent of motive power, Norfolk & Western, was called away on Thursday by the illness of a sister, living at Syracuse. His friends will regret to learn that she died on Sunday morning.

James Gardner, usually known simply as "Jim," has come from Chicago for a short visit to the conventions. He is accompanied by Mrs. Gardner and is staying at the Marlborough-Blenheim.

Among the familar faces missed this year is that of J. R. Patterson, of Locomotive Engineering, who is compelled on account of ill-health to remain in a sanitarium at Monticello, N. Y. He has the wishes of many friends for his early and complete recovery.

The McBarmma Golf League held its annual tournament at the Atlantic City Country Club, Saturday, June 19. S. P. Bush won the championship cup and the handicap cup in Class A; H. H. Vaughan won the handicap cup in Class B; D. F. Mallory won the second prize in Class A; C. F. Quincy won the second prize in Class B. A banquet was served in the evening. The election of officers for the coming year resulted in the choice of E. H. Bankard, president; D. F. Mallory, vice-president, and Clement Street, secretary and treasurer.

The little people who performed a barn-dance on the night of the grand ball of the Master Mechanics' Association are the daughters of G. H. Ferguson, Boston & Albany, Roberta, nine years old, and Frances, seven. Their excellent performance of the dance was a source of great pleasure to a large number of people on the floor and in the balconies.

A bit of John Chamberlain's philosophy: "Scan very carefully letters of introduction which introduce a man as 'an intimate friend of an intimate friend of mine of long standing.'" It is believed that a check changed hands under some such circumstances and came back from the bank marked "No account."

Reuben C. Hallett, who recently became connected with the railway department of the Estate of Edward R. Ladew, New York, is in attendance at the conventions. If you want to see him get interested real quick mention "Hoyt's short lap." He is stopping at Haddon Hall.

Miss Barbara Small, San Francisco, Cal., daughter of H. J. Small, of the Southern Pacific, and a great social favorite at the conventions last year, will be missed this year.

George W. Smith, superintendent of motive power of the Missouri Pacific, could not absent himself from his duties to take the trip to Atlantic City, but his many friends will be pleased to learn of his happiness and that of his wife in the recent arrival of a little son.

Mrs. J. F. Dunn, wife of the superintendent of motive power of the Oregon Short Line, could not attend the conventions this year. It is a pleasure to know, however, that Mrs. Dunn is now enjoying good health, having fully recovered from a severe illness during the past winter. Mr. Dunn is here, and as usual is taking a leading part in the discussions in Convention Hall. He is accompanied to Atlantic City this year by his daughters, the Misses Margaret and Edna Dunn.

Alexander Turner, President of the Railway Supply Manufacturers' Association, was busy most of Saturday afternoon accepting congratulations from his friends and acquaintances for the able way in which he has conducted the affairs of his office as shown by the hearty demonstration at the annual meeting. To-day he is being congratulated for another reason. He has been made manager of sales of the Metal Corporation, Hillburn, N. Y.

Lost—From the booth of the American Vanadium Company, a small black notebook, with gold corners and gilt-edge leaves. It is of value only to the owner, C. H. Halcomb, Pittsburg, whose name is inside. The finder will please return to the booth of the American Vanadium Company.

Mr. and Mrs. J. F. Deems were unable to attend the conventions and will be greatly missed. Mrs. Deems is rapidly recovering from her recent severe illness.

C. B. Young, of the Burlington, greatly regretted his inability to be present and do his part in the business of the conventions. Business pressure kept him at home, but he went to the train in Chicago and said good-bye to his friends when they left last Monday in the Pennsylvania special.

F. H. Clark, of the Burlington, is here, but Mrs. Clark did not accompany her husband. She is greatly missed in the many social affairs.

H. S. Bryan, superintendent of motive power of the Duluth & Iron Range, at Two Harbors, Minn., is recovering after a serious operation performed by the Doctors Mayo, at Rochester, Minn. Both Mr. Bryan and Mrs. Bryan will be missed by the convention people this year.

Charles Booth, who since the last convention has been elected vice-president of the Chicago Pneumatic Tool Company, showed himself on the pier for the first time on Thursday. The change in duties necessitated a change of residence and Charlie now lives in Chicago.

Who ever heard of it costing $2.75 to cut a melon? Well, it happened in the wet goods department of the Shelburne to a prominent representative of a Niagara Falls abrasive concern. It was a Mellon bank note. Evidently that fellow doesn't use a Carborundum knife sharpener.

It is pleasant to note the constant companionship of those veterans, now retired from active service, C. H. Corey, formerly of the Cincinnati, Hamilton & Dayton, and W. H. Thomas, formerly of the Southern. Both took up the simple life at the same time and both were elected honorary members last year. If you are looking for Cory you will see Thomas, and if you are looking for Thomas you will see Cory, unless he happens to be standing the other side of Thomas.

Prof. H. Wade Hibbard, member of the association since 1895, and for the past decade professor of mechanical engineering of railways at Cornell, is now at the University of Missouri, Columbia, Mo., at the head of the department of mechanical engineering. As usual, he is present at the conventions.

Since the opening of the conventions the *Railroad Age Gazette*, having been properly approached, has been pleased to furnish the following items: One minister of the gospel; two valets; one society reporter for the *Atlantic Review*. This is mentioned not in a spirit of false pride, but to give a glimpse of the resources of a well-equipped technical journal.

Warning—Kennicott (don't forget to think about "soft hard water" when you see the name) is a shooter. Up to date he's licked everybody to a frazzle whom he has been able to induce to visit a glass ball and pipe gallery. At the last contest the only pipe left was L. B. S.

The member of the Executive Committee elected to represent the seventh district, and whose name, by a slip of the types, was omitted from the issue of The Daily for Saturday, is E. L. Adreon, American Brake Company, St. Louis.

Mrs. Henry J. Bellman, who was the June bride at the convention of 1904, spent Sunday in Atlantic City with Mr. Bellman.

REGISTRATION—MASTER CAR BUILDERS.

Allen, Arthur, M. M., Temiskaming & Northern Ontario, Young's.
Aldcorn, Thomas, Chicago Pneumatic Tool Co., Marlborough-Blenheim.
Anderson, Geo. T., Supt., C. N. Y. & B. Refr. Co., Chalfonte.
Arp, W. C., S. M. P., Vandalia, Marlborough-Blenheim.
Appler, A. B., M. E., Delaware & Hudson, Marlborough-Blenheim .
Alter, Wm., G. F., Central of N. J., Edison.
Altvater, C. P., General Foreman Car Dept., Pennsylvania, Jackson.
Blewett, S. W., American Car & Foundry Co., Marlborough-Blenheim.
Barry, J. J., M. M., Norfolk & Western, Iroquois.
Bridges, E. A., G. F., Durham & Southern.
Brazier, F. W., S. R. S., N. Y. C. & H., Marlborough-Blenheim.
Boutet, H., Chief Joint Car Inspector, Chalfonte.
Bussing, G. H., S. M. P., E. & T. H., Haddon Hall.
Bloxham, C. M., M. C. B., Union Tank Line, Young's.
Burnett, R. W., A. M. C. B., Canadian Pacific, Marlborough-Blenheim.
Burk, C. W., S. M. P. & C., Marlborough-Blenheim.
Bush, S. M. P., G. M., Buckeye Steel Castings Co., Brighton.
Bretz, F. K., G. M., Morgantown & Kingwood, Traymore.
Bryan, H. S., S. M. P., Duluth & Iron Range, Brighton.
Bradley, John E., Osgood-Bradley & Sons, Brighton.
Bartlett, H., G. S. M. P., Boston & Maine, Brighton.
Burton, T. L., General Inspector, C. of N. J., Traymore.
Bonner, E. D., S. M. P., Michigan Central, Chalfonte.
Bottomly, E. S., Chief Joint Car Inspector, Monticello.
Billingham, R. A., S. M. P., Pittsburg, Shawmut & Northern, Traymore.
Buker, Joseph, Asst. Supt. Machinery, Illinois Central, Chalfonte.
Barnum, M. K., Chicago, Burlington & Quincy, Marlborough-Blenheim.
Bousfield, J. H. A., Pennsylvania, Shelburne.
Bishop, G. C., S. M. P., Long Island, Shelburne.
Carmer, J. R., G. F., Phil., Balt. & Wash., Haddon Hall.
Craig, Andrew, G. E., Boston & Maine, Young's.
Carr, W. K., General Car Inspector, Norfolk & Western, Marlborough-Blenheim.
Craig, James, C. D., Boston & Maine, Marlborough-Blenheim.
Clark, F. H., G. S. M. P., Chicago, Burlington & Quincy, Marlborough-Blenheim.
Carson, G. E., M. C. B., N. Y. C. & H., Marlborough-Blenheim.
Coleman, James, S. C. D., Grand Trunk, Dennis.
Chaffee, F. W., G. C. L., N. Y. C. & H., Dennis.
Courson, J. F., G. F., Pennsylvania, Seaside.
Coulter, H., G. C. I., Phila., Balt. & Wash.
Chamberlain, J. T., Young's.
Chambers, John S., S. M. P., Atlantic Coast Line, Marlborough-Blenheim.
Christopher, J., M. M. & M. C. B., Tor., Ham. & Buffalo, Young's.
Cullinan, John, M. M., Central Indiana, Chetwoode.
Crone, S. A., Shelburne.
Cunningham, D. W., A. S. M., Missouri Pacific, Pinehurst.
Chamberlain, Eugene, Chairman Freight Car Repair Pool, Marlborough-Blenheim.
Chaffee, Edward F., Marlborough-Blenheim.
Cleaver, F. C., S. M. P., Rutland, Marlborough-Blenheim.
Cook, T. R., A. E. M. P., Pennsylvania Lines, Dennis.
Connolly, J. J., S. M. P., Dul., So. Shore & Atlantic, Young's.
Crawford, D. F., G. S. M. P., Pennsylvania Lines, Brighton.
Carroll, J. T., M. M., L. E. & W., Lake Erie & Western, Marlborough-Blenheim.
Curtis, Theo. H., S. M., Louisville & Nashville, Marlborough-Blenheim.
Clark, J. H., M. M., Staten Island R. T., Shelburne.
Coutant, M. R., M. M., Ulster & Delaware, Shelburne.
Canda, F. E., Canda Mfg. Co., Dennis.
Cory, Charles H., Dennis.
Davisson, F. E., S. M., San Pedro, Los Angeles & Salt Lake, Chalfonte.
Davidson, W. W., Gen. For., P. R. R., Trenton.
Davis, G. H., Wabash-Pitts. Term., Brighton.
Deibert, J. H., F. C. R., Lehigh Valley, Bosworth.
De Voy, J. F., M. E., C., M. & St P., Shelburne.
Dow, Geo. N., G. M. I., Lake Shore & Mich. South., Chalfonte.
Dunham, W. E., M. M., Chicago & North-Western, Haddon Hall.
Dodds, E. I., Asst. S. C. D., Erie, Windsor.
Dickerson, S. K., A. S. M. P., Lake Shore & Michigan Southern, Marlborough-Blenheim.
Dyas, E. C., F. C. D., Louisville & Nashville, Dunlop.
Deacon, Edw., Supt., Consolidated Rolling Stock Co., Arlington.
Dickinson, F. W., M. C. B., Bessemer & Lake Erie, Iroquois.
Davenport, C. W., National Foundry Co., Traymore.
Downing, I. S., M. C. B., Lake Shore & Mich. South., Traymore.
Durborow, R. N., S. M. P., Penn., Chalfonte.
Eberle, W. F., G. F., Penn., Chalfonte.
Eddy, F. H., G. F. C. D., Boston & Maine, Young's.
Epstein, Max, G. M., German-Amer. Car Lines, Dennis.
Ewing, J. J., Mech. Engr., Ches. & Ohio, Marlborough-Blenheim.
Edmondson, T. A., G. M., Illinois Car Co., Young's.
Ettinger, R. L., C. M. E., Southern, Dennis.
Everett, Ira., G. F., Lehigh Valley, Islesworth.
Evans, R. C., S. M. P., West. Md. Ry., Pennhurst.
Eaton, G. H., A. M. C. B., Can. Pacific, Clarendon.
Fowler, W. E., M. C. B., Canadian Pac., Marlborough-Blenheim
Farmer, G. W., Gen. For. Car Dept., Okla. Centre.
Fairbank, J. F., M. M., Malvern & Freo. Valley, Stickney.
Fisher, E., G. S., Toronto, Hamilton & Buff., Marlborough-Blenheim.
Fitzmorris, Jas., M. M., Chicago Jct., Young's.
Fowler, Geo. L., Dennis.
Fogg, J. W., M. M., Chicago Terminal Transfer, Chalfonte.
Flory, B. P., S. M. P., N. Y., O. & W., Marlborough-Blenheim.
Fuller, C. E., S. M. P., Union Pacific, Marlborough-Blenheim.
Forsyth, Wm., The Railroad Age Gazette, Dennis.
Fox, Frank L., F. C. R., Pere Marquette, Raleigh.
Fritts, J. C., G. F., Dela., Lack. & West., Marlborough-Blenheim.
Gaskill, C. S., A. E. M. P., Phila., Balt. & Wash., Chalfonte.
Gosline, E. W., For. A. B., Trenton
Gray, G. M., M. E., Bessemer & Lake Erie.
Gorrell, W. T., M. C. B., Philadelphia & Reading, Strand.
Geesey, W. R., Insp., Pennsylvania, Chalfonte.
Garstang, W., S. M. P., C., C., C. & St. L., Marlborough-Blenheim.
Gordon, R. L., Asst. to Pres., Standard Steel Car Co., Marlborough-Blenheim.
Gould, J. E., S. M. P., Norfolk & Southern, Dennis.
Gaines, F. F., S. M. P., Cent. of Ga., Dennis.
Gilbert, E. A., W. H. Miner Co., Chalfonte.
Gilman, G. H., M. C. B., Northern Pacific, Chalfonte.
Goodnow, F. H., M. C. B., L. S. & M. S., Traymore.
Gorey, E. H., G. F., L. & N., Elberon.
Grieves, E. W., Mech. Expert, Galena-Signal Oil Co., Marlborough-Blenheim.
Green Herbert, Dennis.
Gossette, C. E., M. M., Iowa Central, Traymore.
Gilbert, F. M., M. E., N. Y. Central & Hudson River, Seaside
Gauthier, J., M. M., Copper Range, Majestic.
Goodrich, Max, M. M., New York & Ottawa, New Holland.
Hammond, G. O., N. Y. Air Brake Co., Dennis.
Hamilton, W., Prest., Erie Car Works, Traymore.
Hibbard, Prof. H. Wade, Prof. Mech. Eng., Richmond.
Hogsett, J. W., Chief Joint Car Inspr., Ft. Worth, Rudolf.
Hall, Wm. B., Mather Stock Car Co., Traymore.
Heintzelman, T. W., S. M. P., Southern Pac. Co., Chalfonte.
Hardie, Henry, M. M., L. & N., Marlborough-Blenheim.
Hinckley, A. C., M. M., Cin., Hamilton & Dayton, Traymore.
Hennessey, J. J., M. C. B., Chicago, Mil. & St. Paul, Chalfonte.
Hale, H. H., M. M., Gulf & Ship Island, Shelburne.
Hair, John, S. M. P., Balt. & Ohio Southwestern, Dennis.
Hindman, S. M., G. C. I., Pennsylvania, Chalfonte.
Hammett, P. M., S. M. P., Maine Central, Brighton.
Hitt, Rodney, Asso. Editor *Electric Ry. Journal*, Chalfonte.
Hill, Rufus, M. M., Pennsylvania.
Hall, W. H., C. C. I., Cent. R. R. of N. J., Monticello.
Harris, Wells, G. F. C. R., N. Y., N. H. & H., Chester Inn.
Hayes, A C., G. C. F., N. Y. C. Lines, Pennhurst.
Hodgson, John, M. C. B., Grand Trunk, Traymore.
Hendry, John, M. C. B., Grand Trunk, Traymore.
Hyndman, F. T. Brighton.
Hayward, H. S., S. M. P., West Jersey & Seashore, Chalfonte.
Henry, W. C. A., S. M. P, Penn. Lines West, Shelburne.
Irvin, T. B., M. M., Charleston & Western Carolina, Islesworth.
Jacob, Baron, M. M., Kentucky & Indiana Bridge & Railroad Co., Young's.
James, J. M., M. M., Pennsylvania, Marlborough-Blenheim.
Joughins, G. R., M. S., Intercolonial, Shelburne.
James, E. T., M. M., N. Y., N. H. & H. R.R., Rudolph.
Kiesel, Jr., W. F., A. E. M. P., Pennsylvania, Chelsea.
Kapp, W. F., S. S. & M., Richmond, Fredericksburg & Potomac Railway, Marlborough-Blenheim.
Krause, Julius, G. C. I., Pennsylvania R.R.
Kelly, J. W., Div. C. F., Canadian Pacific, Young's.
Keegan, J. E., S. M. P., Grand Rapids & Indiana, Shelburne.
Keagy, C. C., Gen. Foreman, Pennsylvania R.R., Dennis.
Kellogg, W. L., S. M. P. & C. D., Pere Marquette, Traymore.
Kinter, D. H., G. F. C. D., Monongahela R.R., Watkin.
Kalbaugh, I. N., S. M. P., Coal & Coke Ry., Brighton.
Kleine, R L., G. C. I., Pennsylvania R.R., Dennis.
Kendall, A. L., G. F. C. D., N. Y. C. & H. R. R.R., Dennis.

Kendig, R. B., M. E., Lake Shore & Michigan Southern, Marlborough-Blenheim.
Kittredge, A. M., Barney & Smith Mfg. Co., Chalfonte.
Kent, F. S., G. C. I., Pennsylvania R.R., Marlborough-Blenheim.
Lane, F. W., Dennis.
Likirt, G. H., M. M., Union Pacific R.R., Shelburne.
Lauder, J. S., G. F. C. D., L. & N. R.R.
Lindstrom, Chas, Chief Engineer, Pressed Steel Car Co., Chalfonte.
Lovell, Alfred, Traymore.
La Mar, A., Asst. G. C. I., Pennsylvania Lines, Dennis.
Lowell, G. H., A. M. M., L. & N., Metropolitan.
Lynn, Samuel, M. C. B., P. & L. E. R.R., Arlington.
Lentz, John S., S. M. C. B., Lehigh Valley, Islesworth.
Libby, J. E., M. C. B., Swift Refrigerator Transportation Co., Chelsea.
Ligon, L. P., M. M., N. & W., Iroquois.
La Rue, H., M. C. B., Chicago, Rock Island & Pacific, Traymore.
Lungren, W. H., F. C. S., Philadelphia, Baltimore & Washington, Pennhurst
Lockwood, B. D., M. E., C., C., C. & St. Louis., Marlborough-Blenheim.
Maver, A. A., M. M., Grand Trunk Railway, Windsor.
Mengel, J. C., M. M., Pennsylvania R.R., Dennis.
Miller, Wm., M. C. B., Erie, Chester Inn.
Miller, R. S., G. F. C. D., New York, Chicago & St. Louis, Traymore.
Miller, S. W., Supt., American Locomotive Co., Traymore.
Moore, J. F., F. C. D., New York, Ontario & Western, Shelburne.
McKenna, R. F., M. C. B., Delaware, Lackawanna & Western, Marlborough-Blenheim.
Moir, Wm., M. S., Northern Pacific Railway, Minnesota & International Railroad, Chalfonte.
May, H. C., M. M., L. & N. R.R., Chalfonte.
Mills, Wm., M. C. B., Algoma Central, Bothwell.
Manchester, A. E., S. M. P., Chicago, Milwaukee & St. Paul, Traymore.
McGill, A. M., M. M., Lehigh Valley R.R., Traymore.
Montgomery, H., S. M. P., Bangor & Aroostook, Dennis.
McCarthy, H. C., Galena Signal Oil Co., Chalfonte.
McIlvaine, C. L., A. E. M. P., Pennsylvania R.R., Chalfonte.
Murphy, C. W., Supt., Morgantown & Kingwood R.R., Chester Inn.
McCuen, J. P., S. M. P. & M., Cincinnati, New Orleans & Texas Pacific, Dennis.
McFeatters, R. R., Supt., Union R.R., St. Charles.
Martin, P. A., Supt. Eqpmt., National Car Lines, Traymore.
McNulty, F. M., S. M. P., Monongahela Connecting, Chalfonte.
Meredith, H. P., A. E. M. P., Pennsylvania R.R., Chalfonte.
McNaughton, Jas., American Locomotive Co., Marlborough-Blenheim.
McRae, J. A., M. E., Michigan Central, Chalfonte.
Morse, C. S., M. C. B., Wheeling & Lake Erie, Haddon Hall.
Moser, E. L., C. D., Philadelphia & Reading.
McWood, Wm., Grand Trunk, Traymore.
Mandeville, H., G. F. C. D., Pennsylvania R.R., Ethelyn.
Minick, Eli, G. F. C. R., Lehigh Valley R.R., Monticello.
La Rue, Morris, M. C. B., C., R. I. & P., Traymore.
Malthaner, W., M. M., Delaware & Hudson, Traymore.
Millar, E. T., G. F. C. D., B. & M. R.R., Young's.
Maher, P., S. M. P., Chicago & Alton, Toledo, St. Louis & Western, Marlborough-Blenheim.
Martin, J. H., S. C. S., Berwind-White Coal Co., Marlborough-Blenheim.
Neuffer, J. G., S. M., Illinois Central, Brighton.
Nicholson, John S., M. P., St. Louis, Brownsville & Mexico, Marlborough-Blenheim.
Newton, Charles H., Georgia Railroad, Marlborough-Blenheim.
Nelson, E. D., Engineer Tests, Pennsylvania Railroad, Seaside.
Osman, H. L., S. C. D., Morris & Co. Refrigerator Line, Marlborough-Blenheim.
Orchard, J. H., F. C. D., Delaware & Hudson Co., Chester Inn.
Ott, Wm. B., Assistant E. M. P., Pennsylvania Railroad, Chalfonte.
Onderdonck, J. R., Engineer Tests, B. & O. Railroad, Marlborough-Blenheim.
Payne, H. R., Vice-President, Union Trunk Line, Young's.
Perry, H. M., Perry Side Bearing Co., Traymore.
Phillips, C., M. M., New Orleans & North Eastern, Brighton.
Park, S. T., E. M. P., Chesapeake & Ohio Railroad, Marlborough-Blenheim.
Pomeroy, L., Safety Car Heating & Lighting Co., Dennis.
Parish, Le Grand, S. M. P., Lake Shore & Michigan Southern, Lake Erie & Western, Chicago, Indiana & Southern, Marlborough-Blenheim.
Patterson, Galena Signal Oil Co., Marlborough-Blenheim.
Peck, Peter H., Marlborough-Blenheim.
Putnam, C. H., F. C. D., Atlanta, Birmingham & Atlantic, Morris.
Passmore, H. E., M. M., Toledo & Ohio Central Railway, Young's.
Peiffer, Chas. E., F. C. R., Lehigh Valley, Jackson.
Perine, D. M., S. M. P., Pennsylvania Railroad, Traymore.
Pearson, W. H., G. C. F., Canadian Pacific, Rudolph.
Pratt, E. W., Assistant S. M. P., Chicago & North Western, Marlborough-Blenheim.
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Rasbridge, R. B., G. C. T., P. & R. R., Dennis.
Rockwell, C. H., O. M. Edwards Co., Dennis.
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Rommell, Geo., D. M. M., Philadelphia & Reading.
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Riddell, W. A., Traymore.
Stephens, J. E., G. C. I., D., L. & W., Monticello.
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Forster, John, Frisco System.
Forster, John, Frisco.
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Galloway, L. E., F. M., Baltimore & Ohio.
Gardner, Alex., C. D. D., Burlington & Missouri River Railroad, Young's.
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Wilson, J. M., M. M., Philadelphia & Reading, Elberon.
Wennerlund E. K., Traymore.
Wilbur, R. H., V.-P., Lehigh & New England Railroad.
Whiteford, A. W., S. S., Lehigh Valley Railroad Company, Dennis.
Walsh, Chas. E., A C. C., Pennsylvania Railroad, Traymore.
Wilson, H. M., U. S. Geological Survey, Ravenroyd.
Wyatt, F. H., C. C. M. M., Pennsylvania Railroad, Young's.
Wesley, D. S., D. S. F., Philadelphia & Reading, Monticello.
Whitsett, W. B., D., Baltimore & Ohio Railroad, Kenterton.
Whaley, A. R., G. S., New York Central & Hudson River, Brighton.
Wiggin, C. H., M. P., Boston & Maine.
Williams, Chas. S., Philadelphia & Reading.
Wolcott, C. S., W. J. & S. S.
Whyte, F. H., P. A., Duluth & Iron Range, Marlborough-Blenheim.
Whittemore, P. W., Treasurer, Laconia Car Works, Brighton.
Watson, C., Inspector. Pennsylvania Railroad.
Weigle, John, New Ethlin.
Wescott, E. A., Dennis.
Wortham, E. S., Marlborough-Blenheim.
Weiss, F. A., Central Railroad of New Jersey, Elizabeth.
Wilson, J. W., Monticello.
Young, J. W., Asst. Sig. Eng., Erie Railroad, Seaside.
Yoos, Edward A., Foreman Air Brake Dept., C. R. R. of N. J., Edison.
Young, W. E., Yardmaster, New York Centeral, Elberon.
Zimmerman, O. B., Asst. Storekeeper, Pennsylvania Railroad.

TO-DAY'S PROGRAM.

Entertainments.

10.30 a.m.—Orchestra concert, Entrance Hall, New Pier.

3 p.m.—Afternoon at the Country Club, for the convention ladies. (Orchestra.)

3.30 p.m.—Band concert, Hippodrome, New Pier.

9.30 p.m.—Forty-third annual ball of the Master Car Builders' Association, Entrance Hall, New Pier.

Middle Session, M. C. B. Association.. 9:00 a.m. to 1:30 p.m.

Discussion of reports on:

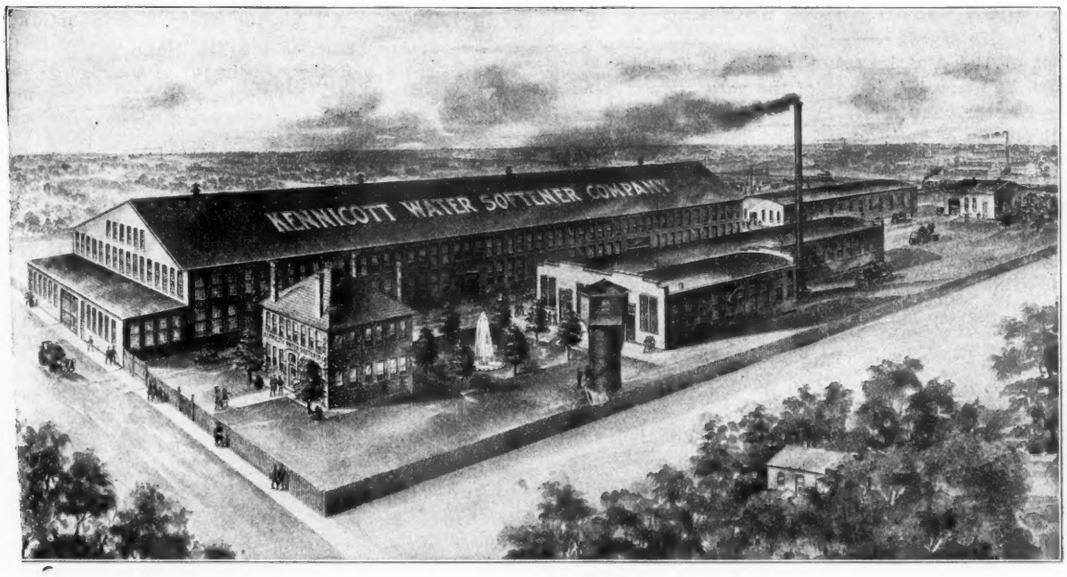
"Tests of M. C. B. Coupler"	9:00 a.m. to 9:45 a.m.
"Revision of Rules for Loading Long Materials"	9:45 a.m. to 10:00 a.m.
"Rules of Interchange," including report of "Arbitration" committee on "Revision of Freight and Passenger Car Rules"; also reports of committees on "Freight Car Repair Bills and Air-Brake Hose"	10:00 a.m. to 11:00 a.m.
"Cast-iron Wheels"	11:00 a.m. to 12:00 m.
"Splicing Sills"	12:00 m. to 12:15 p.m.
"Tank Cars"	12:15 p.m. to 12:30 p.m.
"Safety Appliances"	12:30 p.m. to 1:00 p.m.
"Side Bearings and Center Plates"	1:00 p.m. to 1:30 p.m.

Adjournment.

The Duntley Manufacturing Company, Chicago, has rented, for the season, one of the most desirable stores in Atlantic City, No. 1211 Boardwalk. After newly decorating the place, a full line of Duntley vacuum cleaners was installed for practical demonstrations. Although the store has been opened only during the past week, it has been visited daily by large numbers of interested people, both attendants at the convention and visitors to Atlantic City. Attractive stores have been opened by the company in Chicago, New York, Cleveland, and other cities, and the orders for this popular cleaner are said to be taxing the full manufacturing facilities of the company. During the first few days of the Master Mechanics' convention, orders for 127 cleaners and fixtures were taken at the Atlantic City store and at the company's exhibit booth on the Pier. John W. Duntley, president of the company, is here and is actively pushing the sale of the device.

KENNICOTT COMPANY'S PLANT.

The accompanying cut shows the Kennicott Water Softener Company's plant at Chicago Heights, Ill. While this factory was originally built solely for the manufacture of the Kennicott water softener, it has been found that the extensive equipment, together with the high grade of engineering and labor necessary for this work, gave this company unusually fine facilities for the fabrication of other steel plate products as well. In consequence, its business has rapidly extended, and this concern now makes not only water-softening machinery, but a large output of steel storage tanks, car tanks, caissons, boilers and the like as well.



Kennicott Company's Plant.

CAST STEEL END-SILL, WITH SELF-CONTAINED FRICTION BUFFER.

The present limited allowable travel of 2¾ in. in the M. C. B. coupler limits the capacity of the friction draft gear to 150,000 or 175,000 lbs. capacity. Higher capacity at this travel makes a stiff gear unsatisfactory for good results in service, but a higher capacity gear can be made if increased travel be allowed.

To give increased friction buffing resistance, with present travel of the coupler and in connection with the present capacity of friction draft gears, the Gould Coupler Company, Depew, N. Y., offers a cast steel end-sill, having a friction buffer self-contained in the cast steel sill and designed for either wood or steel under-frame.

This friction buffer is operated by the horn of the coupler after 1 in. travel has been reached. The friction comes into action for the balance of the travel of 1¾ in., giving a resistance, at this travel, of 100,000 to 125,000 lbs. This frictional resistance, with the 150,000 lbs. of the friction draft gear, makes a total buffing resistance of 250,000 lbs., or 66 per cent. more than when only friction draft gear is used. The free travel of 1 in. of the coupler before action of the buffer is essential for the easier handling of the train, and only comes into action to resist or absorb the heavier buffing shocks, the ordinary running shocks being absorbed by the friction draft gear.

The wedges and springs may be inspected, removed and replaced by the removal of the front retaining plates, and this without disturbing the coupler or attachments. The cast steel end-sill has lug-projections from the rear and bottom for the attachment of the sills and draft gear beams. The rear end of the bottom projections form the front stop, or shoulders, for the draft gear follower.

The steel end-sill, which contained buffer, is a mechanical and practically effective arrangement for increased frictional buffing resistance in connection with present standards and practice. This design is intended to meet the demand for additional frictional absorbing capacity without any radical change in present practice.

HIGH SPEED BRAKE SHOES.

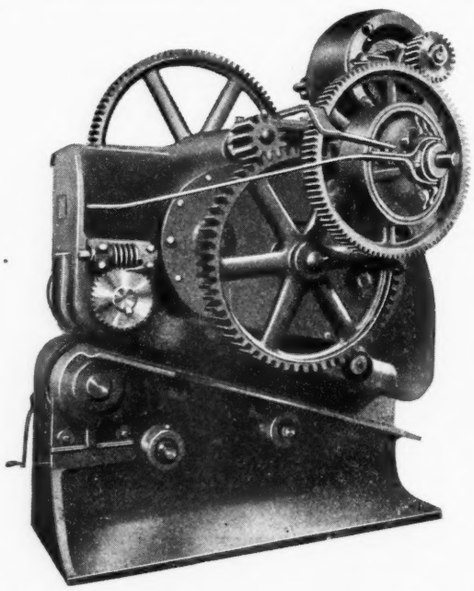
The exhibit of the American Brake Shoe & Foundry Company, Chicago, in space 454, is one of the very attractive ones on the pier. The company shows a varied assortment of brake shoes for all classes of railway equipment. The attention of officers considering the application of high speed brakes on heavy passenger cars is directed to the very interesting diagrams showing results of brake shoe made on the Sellers brake shoe testing machine, under braking loads ranging from 2,808 to 17,000 lbs., applied to a steel-tired wheel at speeds ranging from 65 to 80 miles per hour. The effect of such high braking loads on various shoes in common use is explained and shoes which successfully meet the high speed brake requirements are on exhibition. These extreme conditions require the shoes to be reinforced from face to back to enable them to withstand the extreme heat generated in the high speed stops under the heavy load applied by the high speed brake. Diagrams showing stops of a 160,000-lb. eight-wheel car, with 17,000 lbs. on the brake shoe, from speeds of 80 miles per hour in about 2,000 ft. and 33 seconds time are shown.

The McConway steel tired wheel shown by The McConway & Torley Company, Pittsburgh, Pa., is attracting much attention, and should be seen by all car men interested in car wheel improvements. This wheel has a rolled steel tire upon a cast steel center with a cast bond without bolts or rivets—practically a solid steel wheel with the desirable feature of a rolled tire. When a tire is worn out a new one can be applied to the same wheel center, thereby producing a new wheel for the cost of a new tire.

SCULLY ROTARY SPLITTING SHEARS.

Scully rotary splitting shears are adapted for splitting plates of any length or width, and can be used advantageously for cutting out boiler heads, or like work. The cutting is done by two hardened steel cutters revolving in opposite directions. A positive continuous feed is obtained by having the edges of the cutters milled, leaving the operator free to guide the plate. Both of these cutters are reversible, enabling them to wear twice as long. The speed of cutting is limited only by the ability of the operator to guide the plate properly; 8 ft. per minute has been found to be satisfactory in this respect.

Each cutter is driven by a train of spur gearing, and those two trains are combined at the rear of the machine, where



the planes of sheared plates permit a horizontal shaft to connect the opposite sides of the machine. The middle gear in the top train is driven from reduction gearing on the outside of the machine. All gearing except the reduction gearing is inside of the frame of the machine, accessible through removable cover plates. Adjustment of the cutters in a vertical direction is provided for by making the supporting shafts for the cutter gears eccentric in their bearings, and with suitable means for controlling.

The machines are made in two sizes, either belt or motor driven. The frame is made from close-grained cast iron. All gears have the teeth cut from solid rims. Pinions are cut from the solid steel blank. All heavy duty bearings are brass bushed and heavy duty gears are steel castings. The Scully Steel & Iron Company, Chicago, is the maker.

ALL-STEEL BOX CARS.

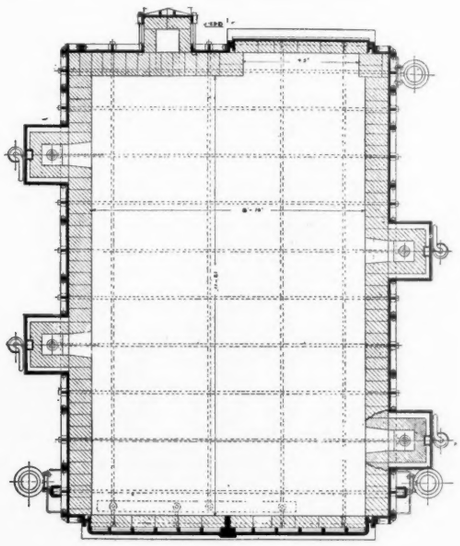
After an inspection of the model all-steel box car, shown at the exhibit of the Bettendorf Axle Company, Davenport, Iowa, in booth 200, you will be in a better position to discuss the advantages of this type of all-steel car. During the past year many improvements have been made in design and construction which overcome the common objections to the all-steel box car for general service.

The purpose of this exhibit is to show you and explain every detail of the construction. Figures on the cost of construction, maintenance and operation of rolling stock favor the all-steel box car. The question has been how to build a steel car body that could be used for all kinds of merchandise transported in box cars.

Before you discuss the all-steel box car question again, you should know how the Bettendorf car is built.

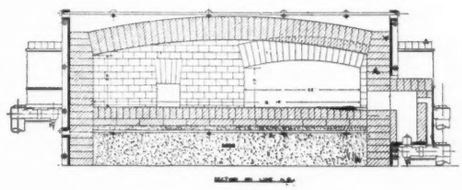
STEEL CAR REPAIR FURNACE.

The repairing of steel cars is not a serious problem where proper facilities are provided. The greatest difficulty is experienced with bent or buckled parts, but these are readily repaired after some form of heat treatment. In yards where steel cars are repaired some form of furnace is a necessity. It should be large enough to take in the largest plates used on steel cars and should make provision for locally heating a long sill or frame.



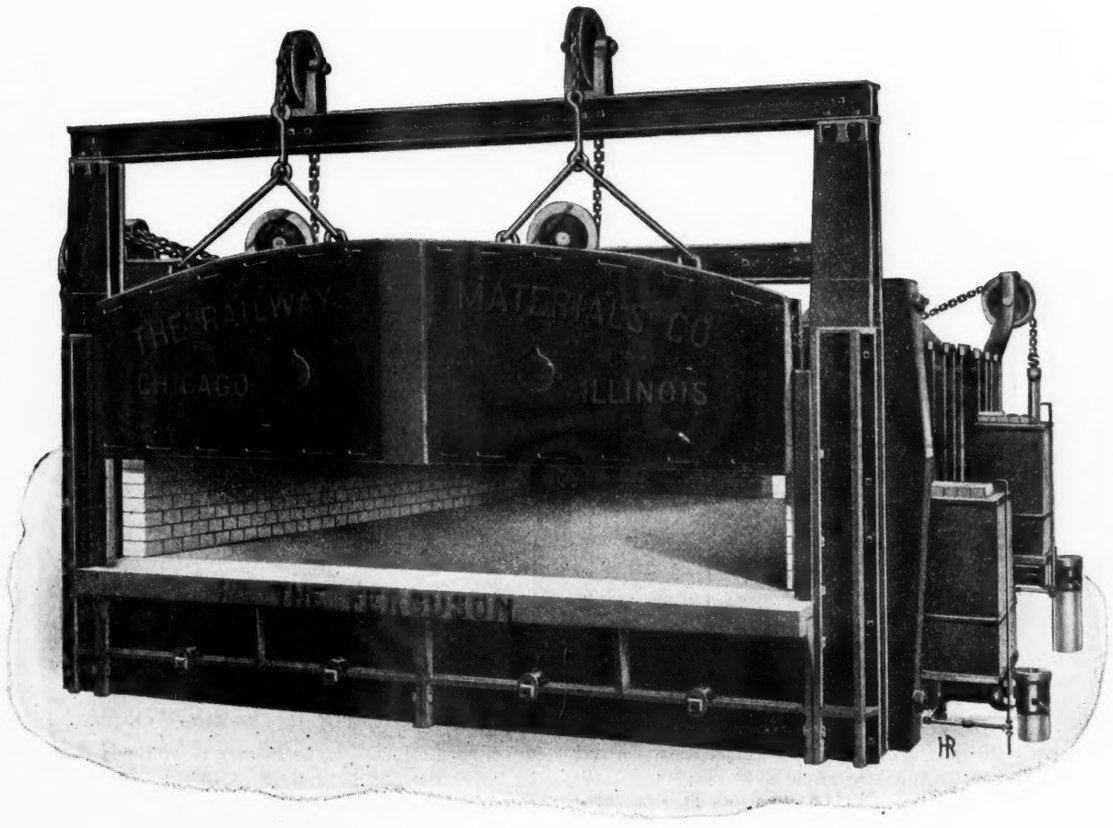
Steel Car Repair Furnace.

The Railway Materials Company, of Chicago, manufacture a line of furnaces for this class of work, and a cut of one of their furnaces is presented herewith. This furnace has a hearth approximately 9 ft. wide and 14 ft. long, and being of ample dimensions for taking in the largest car plates. One of the four burners is so located as to facilitate heating a long member locally if desired. Doors are provided the full width of furnace at one end and a smaller door is recommended at the other.



Steel Car Repair Furnace.

Large quantities of steel car work can be heated and straightened in a very short interval, and one of these furnaces will handle more of this kind of work at about one-eighth the cost than will ten or twelve smith fires. The furnace is designed to take up the minimum floor space, and as it operates with oil no attention is required for handling coal or ashes. It requires only a few minutes after lighting to get it to a working temperature, which is readily maintained throughout the day. A new catalog illustrating this furnace has just been issued.



Steel Car Repair Furnace.

PAST PRESIDENTS OF THE MASTER CAR BUILDERS' ASSOCIATION.

I. W. VAN HOUTEN.....1767-68-69, 1873
F. D. ADAMS.....1870-1871
M. C. ANDREWS.....1872
LEANDER GAREY.....1874-1885
B. K. VERBRYCK.....1885-1887
WM. MCWOOD.....1887-1890
JNO. KIRBY.....1891-1893
E. W. GRIEVES.....1893-1895
J. S. LENTZ.....1895-1897
S. A. CRONE.....1897-1899
C. A. SCHROYER.....1899-1900
J. T. CHAMBERLAIN.....1900-1901
J. J. HENNESSEY.....1901-1902
J. W. MARDEN.....1902-1903
F. W. BRAZIER.....1903-1904
W. P. APPLEYARD.....1904-1905
JOS. E. BUKER.....1905-1906
W. E. FOWLER.....1906-1907
GEO. N. DOW.....1907-1908

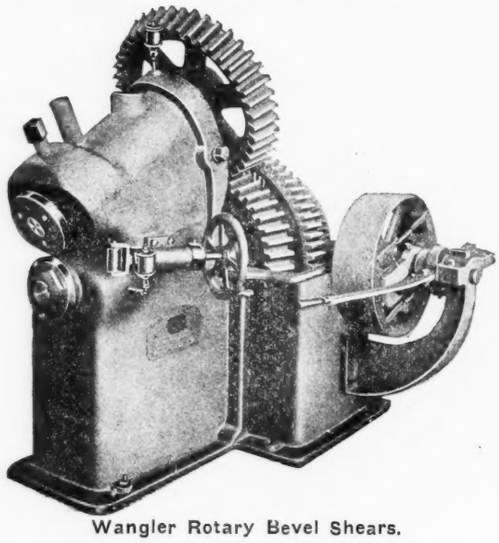
PASSENGER COACH SPECIALTIES.

The General Railway Supply Company, Chicago, in spaces 157-9, Machinery Hall, exhibits an end of a vestibuled passenger coach equipped to show the application of several passenger coach specialties which this company manufactures. The steel sheeting shown is the type which is said to be used universally by the Pullman Company for both wood and steel cars and by the New York Central Lines and others for application to all-steel cars. Sample panels and sections of this sneathing arm on exhibition. The use of the Garland ventilators is demonstrated by having two small motor-driven fans mounted on the roof of the car. The efficiency of these ventilators is demonstrated by the way in which cigar smoke is carried out of the car.

WANGLER ROTARY BEVEL SHEARS.

The Wangler rotary beveling shears are used for beveling plates (either straight or irregular work) and flanged heads, where the length of flange is sufficient to allow the head to clear the cutter. This flange length is about 3 in. for a ½-in. machine and 4½ in. for a ¾-in. machine, depending on the diameter of the upper cutters and the angle of shearing. The cutting is done by means of two hardened tool steel cutters having milled edges and revolving in opposite directions, the milled edges making the machine self-feeding. Angle irons can be beveled, as there is no projecting nut on the upper cutter. The absence of this nut on the upper cutter allows about one-third of one leg of an equal-leg angle to be removed. Both of these cutters are reversible, so that when one edge becomes dull the opposite edge can be used, giving double service. The speed of cutting is limited only by the operator's ability to guide the plate properly, and is about 6 ft. per minute, which is about 12 times the amount of beveling that can be done with pneumatic hammers, with no more power than would be required to run a compressor.

The shaft driving the lower cutter is horizontal, and the upper cutter shaft inclined at an angle of 30 deg. Special attention has been given to the accessibility of parts, and any shaft can be removed without disturbing other shafts or dismantling the whole machine. The upper cutter shaft is carried in a cast-iron sleeve or cage which is brass bushed. This cage is supported by an eccentric bolt, by turning which an



Wangler Rotary Bevel Shears.

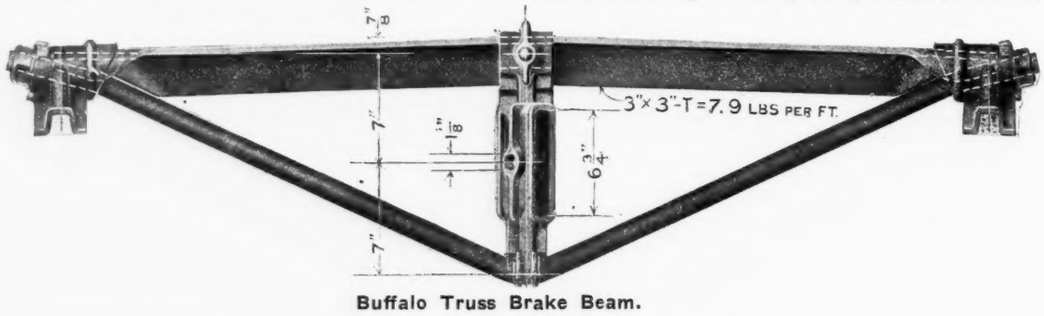
adjustment of ¼ in. can be had parallel to the shaft. This allows variation in the amount of bevel, and for refinishing cutters without having to put washers back on the upper one.

Provision is made for taking up wear in a longitudinal direction in the cutter shafts. The upper cutter is fastened to a flange on the end of the shaft by means of three machine screws, the heads of which are set in counter-sunk holes in the cutter. Countersinks on the reverse side set over the heads of the driving screws, making three large screws to hold the cutter and six for driving, in addition to the key.

The standard machines, which are made in two sizes, are belt-driven, but they can be arranged for motor drive if desired. The Scully Steel & Iron Co., Chicago, is the maker.

BUFFALO TRUSS BRAKE BEAM.

The Buffalo Brake Bean Co., New York, recently completed and now occupies its new factory in Buffalo, N. Y., which is modern and up to date, being designed and built to meet future requirements. The factory is equipped throughout with the latest designs of individual motor driven machinery. It manufacturers a full line of I-beams, special section and truss brake beams for tender, freight, passenger and interurban equipment. It also manufacturers a line of forgings consisting of brake heads, fulcrums, safety chain clips, wheel guards and hangers.



Buffalo Truss Brake Beam.

The accompanying illustration shows its new No. 2 truss brake beam, also known as "the beam with the back-bone," the name suggesting itself from the arrangement of the compression member, which is made from a standard. The section with ends formed in a way that maintains its full strength from end to end.

The tension member is a rod, threaded on ends, passing over fulcrum through formed ends of compression member and heads. The arrangement for combining the members is simple yet effective. The feature of being able to keep all members up to their work at all times is embodied in the arrangement.

The truss beam is made in three sizes: No. 1 for equipment of less than 35 tons capacity; No. 2 for equipment with capacity of 35 tons and over; No. 3 with adjustable heads for high speed passenger service.

WESTINGHOUSE HOSE-PROTECTING COUPLING.

For some time it has been evident that some provision should be made whereby hose would not be subjected to heavy pulling strains when cars are drawn apart and the hose is not uncoupled by hand.

The new Westinghouse "hose-protecting" coupling is identical with the standard couplings in every respect except that the new type has a "flexible bead," instead of the ordinary bead which is integral with the coupling casting.

The Westinghouse Air Brake Co., Pittsburgh, Pa., is demonstrating the practicability of this new device by means of a movable truck, representing two cars, equipped with a pair of the old standard and the improved type of coupling, showing by comparison the superiority of the "hose protecting" coupling in reducing strains imposed upon the hose. When coupled in normal position the improved coupling locks as securely as the standard type with which it is interchangeable and a proportionate advantage will be derived when the two types are used together.

It is believed possible, by the use of this improved coupling, to reduce very greatly the percentage of hose failing on account of rupture—particularly of the inner lining—due to excessive strains imposed in separating cars without uncoupling the hose by hand.

NATIONAL SASH BALANCE.

The National sash balance made by the National Lock Washer Co., Newark, N. J., is a specially made spring roller with attachments, held in brackets out of sight at the highest part of the sash slide.

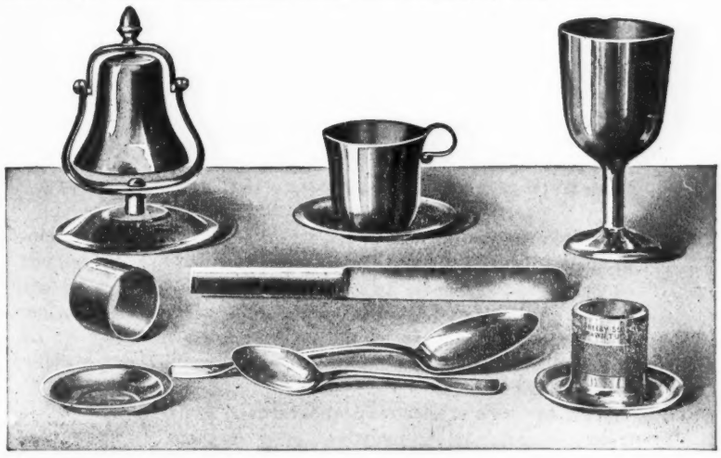
The roller is held to the sash by two belts, one at either end of the roller. The belts are connected with the roller by brass straps locked in grooves of roller, and the lower ends are connected to sash by hooks secured to the belt by brass straps. These hooks fit into reinforced eyes which screw into top of sash, making it very easy to take out the sash when necessary.

This equipment insures an easily operated window.

SHELBY DISHES.

Reportorial attention was attracted to National Tube Company's booth 28 by an exclamation of an enthusiastic lady to her husband: "Do look at those dear dishes and that table bell. Do you suppose they'd sell me one of those?" So we knew there was still something we had not seen, and though our qualifying adjective was not quite like the lady's, still, quite as enthusiastic. The Shelby dishes are certainly an interesting exhibit of the extensive possibilities of Shelby seamless steel tubing.

The articles cannot be considered in any way mechanical appliances, yet no mechanical man will fail to appreciate how the various operations necessary to flange, expand, flatten or bend the tube in order to make the various forms may be applied as mechanical processes for innumerable mechanical purposes. Shelby steel tubing is made in sizes from ⅛ in. to 30 in., outside diameter, and with walls up to 1½ in. thick in the larger sizes. Automobile axles, axle housings, hubs, boiler



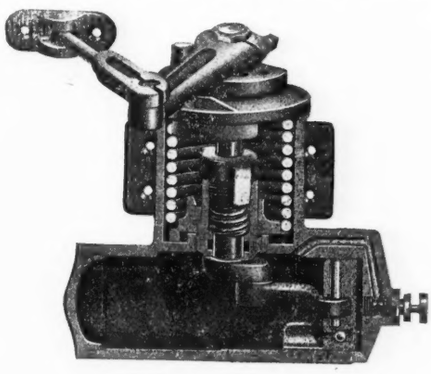
Shelby Dishes.

tubes are but a small proportion of auto parts which are made of this material. But the only thing to do is to go and see the "dear dishes," and ask the representatives a few questions about Shelby seamless steel tubing; mighty interesting story!

The Wells Light Manufacturing Co., Jersey City, N. J., now has the eastern agency for the following firms: The American Specialty Co., Chicago; the Victor Tool Co., Waynesboro, Pa.; the Emmert Manufacturing Co., Waynesboro, Pa.; the Yost Manufacturing Co., Reading, Pa.; the Glazier Headlight Co., Rochester, N. Y.; the Trill Indicator Co., and the G. H. Williams Co.

RUSSWIN DOOR CHECK.

The Russwin door check not only has all the good features of other liquid door checks, but has the additional feature of being reversible. That is to say, it comes to the carpenter already assembled for a right or a left-hand door. To reverse other checks (made right or left hand), the arm would have



Russwin Door Check.

to be taken off, the cap unscrewed, the spring taken out and turned upside down and the cap and arm replaced. In such an operation, other parts of this delicately made article are most liable to be misplaced, and the check sent to the factory for repairs. Users of the Russwin do not incur this liability.

The spring is the life of the check. In other standard makes of checks the flat clock spring is used, while in the Russwin a round coil wire spring is used, which is claimed by all door check specialists and spring manufacturers to be more durable than the flat clock spring. The reason for this is that when the arm of the check is in operation all parts of the spring are in action, thereby equalizing the tension on the spring and being less liable to break.

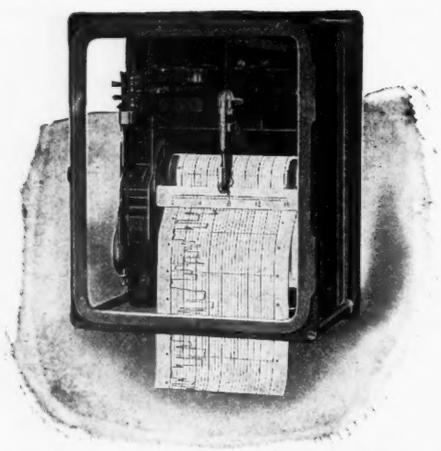
The checking device embodies all the modern improvements which have been made on other high-grade checks.

The Russwin door check is fully warranted by the Russell & Erwin Manufacturing Co., 94-98 Lafayette street, New York.

WESTINGHOUSE CURVE-DRAWING INSTRUMENTS.

To determine the actual results which their shop systems produce in practice has been the aim of the heads of railway shops for many years, and numerous devices have been employed. But all have been more or less unsatisfactory, either because of the expense or the clerical labor involved, or because of the inability to devise a convenient method of securing the information.

With the help of electrical apparatus it is possible to obtain from any motor-driven machine tool a complete graphic record of exactly what the machine is doing. In the case of a planer, for instance, every stroke may be clearly seen on the record, and, in any tool, every stop for change of work or other causes, every adjustment, etc., may be observed and the length of time for each estimated at a glance. In addition, the amount of power required to do any given piece of work may be determined with accuracy. These records are obtained by the use of a



Westinghouse Curve Drawing Meter.

Westinghouse curve-drawing instrument in connection with individual motors driving machine tools.

The meter consists of a pen, instead of the usual indicating needle, arranged to deflect over a scale. Under this pen is a large roll of specially graduated paper moved by clockwork, the usual speed being 8 in. an hour. The pen produces a fine mark on the paper, its distance above the zero line showing the power consumed by the motor.

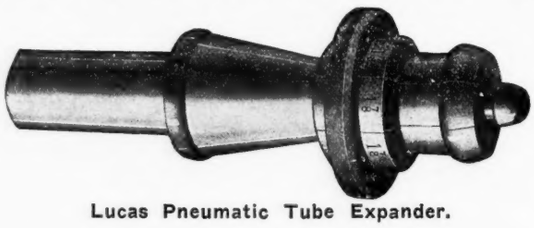
A typical record, very much reduced, is shown herewith, illustrating the operation of roughing out a motor shaft on a Lodge & Shipley lathe. The curve is read from right to left, with zero at the bottom. The outline of the shaft worked on is also shown; the lettering on the shaft and the record correspond.

With such a curve any foreman, superintendent or other person interested in investigating the actual working conditions of his shop can have exact records of any or all operations which he desires to consider.

These Westinghouse curve-drawing instruments connected to Westinghouse motors driving various machine tools may be seen in operation in the exhibits of the American Tool Works Co., Cincinnati, Ohio; Cincinnati Bickford Tool Co., Cincinnati; Cincinnati Shaper Co., Cincinnati; Lodge & Shipley Machine Tool Co., Cincinnati; Queen City Tool Co., Cincinnati; Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa.

LUCAS PNEUMATIC TUBE EXPANDER.

The Lucas pneumatic tube expander shown herewith is worked by a pneumatic hammer. It is claimed to save much time and labor, and works easily, the pin never sticking. It

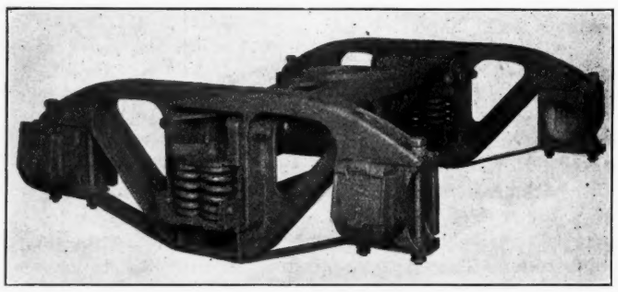


Lucas Pneumatic Tube Expander.

can be turned readily by the operator, does not injure flue or sheet and saves 50 to 75 per cent. in labor. It is made of high-grade tool steel. The Scully Steel & Iron Co., Chicago, is the maker.

GOULD TRUCK SIDE FRAME.

The design of this side frame made by the Gould Coupler Co., Depew, N. Y., meets modern practice. It is exceptionally strong in the arch over journal boxes, as the accompanying cut of the side frame for 100,000-lb. truck, tested to 500,000 lbs., shows. This frame was tested with boxes and bottom tie strap, the boxes being supported at the journal center. With the above load, applied at the spring plank seat in the frame, the deflection was 1¼ in. and set $1\frac{1}{16}$ in. No defects of any character are said to have been visible in the frame after test.



Gould Truck Side Frame.

The journal box ends bent only ⅛ in. at the 250-ton load. The illustration shows the uniformity of the deflection and also the very slight distortion.

The bolster column guides are riveted permanently to the spring channel and the variations in the widths of the commercial channels do not affect it, the bolster guides being made in separate pieces, which allow for variation in the widths of the channels. These guides are riveted to the spring channel, the bolster inserted and the side frames placed on the ends. Separate bolster guides take the wear of the bolster, no wear coming on the side frame itself. This increases the life of the side frames, as the bolster guides can be renewed at any time when excessively worn.

The truck is easily assembled, as the bolster guides are integral with the spring channel, being riveted to it. The construction and application of this side frame avoids the possibility of any twisting action breaking the channels, and allows a certain amount of flexibility, as given by the Diamond truck

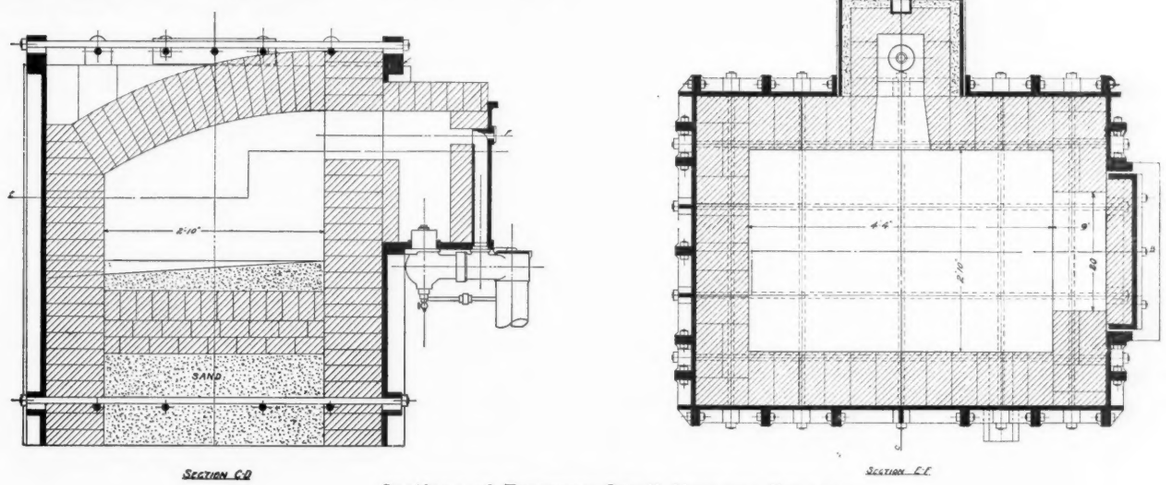
of common form, as the spring channel is neither bolted nor riveted to the side frame.

The two bolts holding the upper portion of the bolster guides to the side frame are covered by the bolster and the bolts cannot come out, even should the nuts work off. The lower portion of the bolster guides forms a seat, having lugs on the bottom sides, that interlock the slide frame. This secures the lower portion of the bolster guides and holds the side frames in alinement. Lips on the inside of the bolster guides abut against the side frames, taking the lateral thrust of the bolster. The ends of the side frame over the journal boxes are made exceptionally deep to secure ample strength to prevent bending at this point of the frame.

The opening in the frame is of rectangular form and has no enlargements at the top or bottom. This makes the two vertical tension portions of the frame straight with no offsets. The upper portion of the frame is an inverted channel and the lower sections of angle iron form. The brake hanger lugs are cast integral with the frame, made to take the standard M. C. B. link brake hanger.

This side frame will take the standard bolsters having bolster guide lugs both on the inside and outside at the ends of the bolster. No special form at the ends is required.

Side frames of this design can be made to meet the various detail dimensions required for application to various classes of equipment.



Sections of Ferguson Small Hammer Furnace.

TENDER UNDERFRAMES.

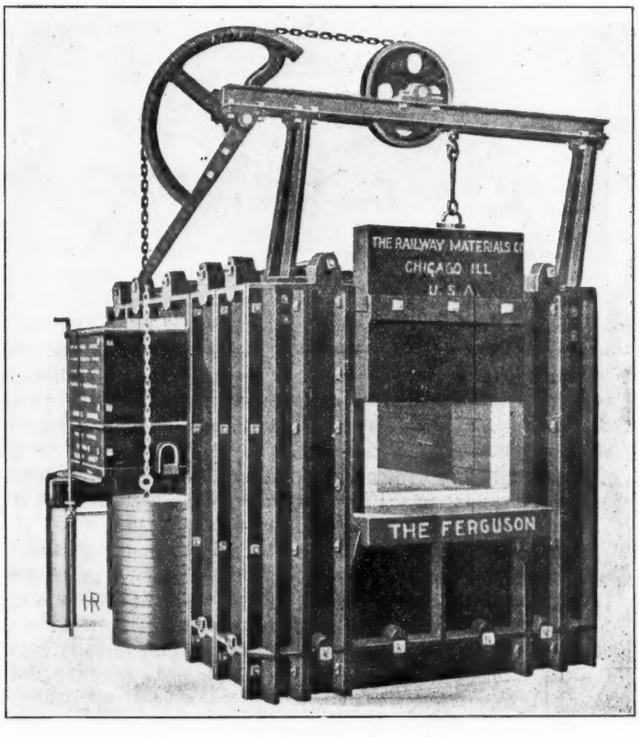
The Scullin-Gallagher Iron & Steel Company, St. Louis, Mo., has recently placed on the market underframes for locomotive tenders, composed of integral cast steel ends, bound together with structural shapes. The unique features of these designs are the integral ends which combine the bolster, draft and buffing appliances, end sills, push-pole pockets and coupler attachments, elimination of rivets and minimum amount of structural steel exposed to corrosion. The underframes are well braced to avoid distortion, all metal being disposed to obtain the maximum amount of strength with the minimum amount of weight, the ends being designed extra heavy to withstand excessive stresses.

FERGUSON SMALL HAMMER FURNACE.

The Ferguson oil furnace has been developed so that it is made in numerous sizes and shapes and is adapted to all kinds of railway shop work where metal is to be heated. The furnace here illustrated is 2 ft. 10 in. x 4 ft. 4 in., inside. It is intended to be an all-round useful furnace for the smaller shops where it is desirable to heat heavy forgings and occasionally work up small quantities of scrap. It is also used in working up old axles. It does not demand a large hammer gang, but is especially useful for medium size work in the smaller shops.

The advantages of the oil furnace are numerous. The economies of fuel and of time are among the most prominent. With an equal expenditure for fuel, the oil furnace is able to increase the output on an average, over 100 per cent. The oil furnace therefore results in the use of less fuel per day and a largely increased output and a corresponding reduction in cost for the finished unit of work.

For locomotive shops a variety of these furnaces have been designed; one used in very large numbers is the Ferguson flue welding furnace. It takes up a minimum floor space and maintains an ideal welding temperature with freedom from oxidation, and the capacity is only limited by the ability



Ferguson Small Hammer Furnace.

of the operator to handle tubes to it. This furnace is used daily in hundreds of shops and by most of the larger railways in the United States and Canada.

The spring band furnace made by this company is 2 ft. 4 in. x 2 ft. 10 in., inside. It is useful for heating work for small hammers and is especially adapted to heating the bands for heavy locomotive springs. Another furnace used in locomotive shops is the case hardening furnace, which is 5 ft. x 6 ft., inside. On account of the large door-way, this furnace is furnished with an air cyclinder for operating the door. The large double door forging furnace is 5 ft. deep and 8 ft. long, and it is long enough to take in 10 piles of scrap for slabbing purposes. By the use of this furnace, many shops have decreased the fuel and labor cost for their work by 40 per cent. They have also eliminated the handling of coal and ashes and have made a material saving in shop space as compared to the furnaces using coal.

These furnaces are supplied by the Railway Materials Co., Chicago.

PLATE GLASS FOR COACHES.

Because plate glass was once a very costly product, and window glass comparatively within the reach of one and all, the more expensive glass was thought to be the extreme of luxury. Progressive men of to-day, architects, builders, railway officers, have, one by one, awakened to the fact that there is no economy in the use of cheap glass. And they are seeing that there is economy of many sorts in plate glass in intrinsic value, appearance, material comfort and decidedly in the cost of maintenance through the use of polished plate glass as compared with cylinder or blown glass.

To the uninitiated person a simple object lesson may be offered by inviting him to a stroll along a residence street in any ordinary town. Here and there a front window will be seen which gives a twisted, distorted reflection of houses or other objects on the opposite side of the street. This kind of reflection is never shown in plate glass—it is only seen in so-called cylinder or window glass. The windows seen during such a walk which give sharp, brilliant and true reflections are made of plate glass whose surfaces have been ground and polished.

Sheet glass is never perfectly flat, and from its method of manufacture cannot be made flat, but contains a perceptible bow. This bow causes a good deal of breakage even while being glazed in attempting to fit the frame; while in the case of the car windows of railway trains, the constant jarring of the train, the raising and lowering of windows, a slight blow, all result in a tremendous amount of breakage.

Plate glass, on the other hand, has a perfectly flat surface owing to the fact that it is ground flat, and is scoured and polished flat. It is therefore not subject to the same breakage in the fitting, or from jars or blows. Plate glass has far more resilience and toughness than cylinder glass, owing to careful annealing during its manufacture.

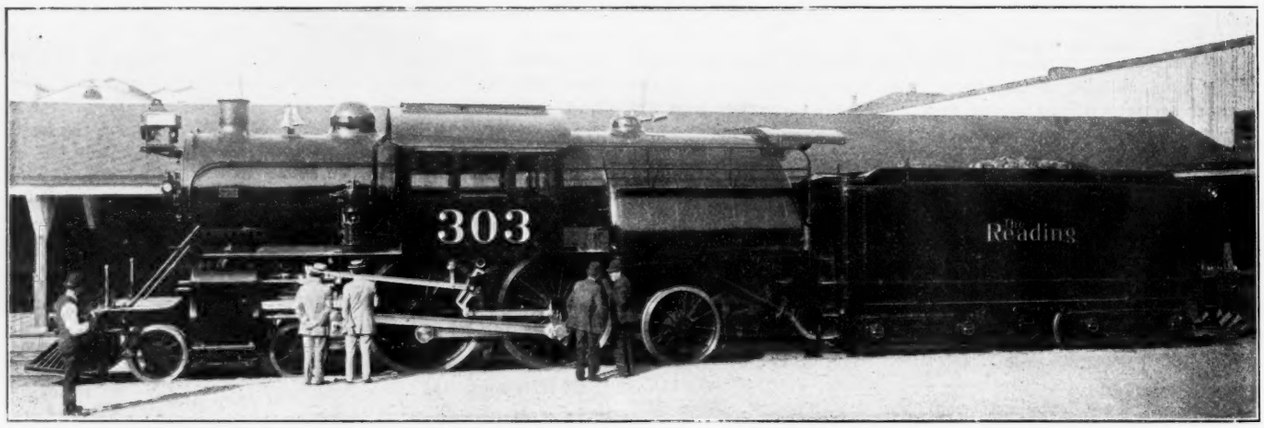
The old passenger coach glazed with twisted sheet glass, so trying to passengers' eyes, is no longer considered modern. Competition and rivalry among railways has led to greater attention being paid to the comfort of passengers, and to the appearance and elegance of the equipment.

Experience has demonstrated to the railways that the lower cost of maintenance warrants the superior product, as being quite as cheap as the inferior cylinder or blown glass, because of fewer replacements. The comfort, value and elegance are therefore clear gain. In another sense also, railways are now appreciating the value of plate glass, this is in its use in the engine cabs, where the clearest vision is a vital necessity to the engineer.

It will be but a few years hence when every first-class railway coach in the country, and every house excepting those of decidedly cheaper character will be glazed throughout with polished plate glass. The architect has awakened to necessities involving his own interests. He must satisfy the clients by whom he is employed; and experience has shown him that he cannot satisfy a builder for whom he has specified cheap and inferior glass.—*Abstract from Patton's Monthly, June*, 1909.

THE READING THREE CYLINDER LOCOMOTIVE.

The Reading has just completed a powerful high-speed locomotive which is now on exhibition at the passenger station of that railway at Atlantic City. The engine is of the three-cylinder type and has a number of new features. It was designed by H. D. Taylor, S. M. P., and was built at the Reading shops. The three simple cylinders are 18½ in. diameter and 24-in. stroke, and the driving wheels are 80 in. diameter. The total weight of the engine is 207,000 lbs., and the weight on drivers, 112,000 lbs. The engine has piston valves and the outside cylinders are operated by the Walschaerts valve gear, while the inside cylinder is controlled by a Joy valve gear. The use of the Joy gear is quite unusual in this country, but it is extensively used in England on three-cylinder locomotives, and is so admirably adapted to that type that it was natural for Mr. Taylor to adapt it to his design. The new Reading locomotive is intended for high-speed service, and as that line has for a long time been famous for unusually fast schedules, the performance of this engine will be watched with more than ordinary interest. The engine is resplendent in polished steel and brass, and in addition to the highly finished rods and valve motion, the large castings which form the housings for the guides are prominent in their unusual shape and the extent of the finished surface.



The Reading Three Cylinder Locomotive.

STEEL PASSENGER CARS.

The excellent results obtained in freight service from cars constructed of steel, together with the growing scarcity of timber suitable for car construction and the consequent increasing cost of wooden cars, and the demand on the part of the traveling public for fireproof construction in passenger equipment, caused railroad officials and car builders to make careful canvass of the possibilities of steel when used in passenger car construction.

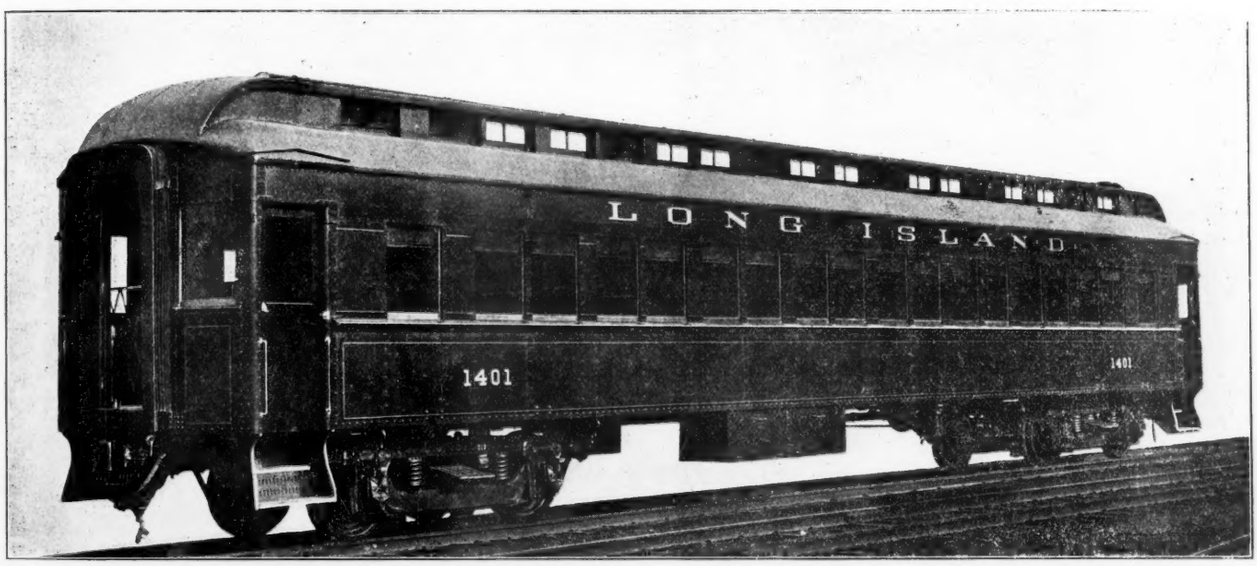
Many designs were made, and some few sample cars constructed, but passenger car construction of steel remained on an experimental basis until early in 1904, when the Interborough Rapid Transit Company, desiring the best car it was possible to construct, in order to meet the exacting demands of service in the New York Subway then nearing completion, placed with the American Car & Foundry Company an order for 300 cars. This initial order, because of its largeness, naturally attracted great attention, and the building of the cars and their subsequent operation were closely watched by railroad men and car builders generally. Five years of hard and constant use has demonstrated the wisdom of their decision, and so well satisfied were they with the way the builders performed their part, that in 1907, when increasing demands upon the subway made the need of new equipment imperative, the American Car & Foundry Company received an order for 50 similar cars, and later, in 1909, an order for 110 additional cars.

In this same year (1904) the Long Island Railroad, beginning its scheme of electrification and influenced somewhat, no doubt, by the success attending the erection of the Interborough cars, placed with the same builders an order for 134 steel passenger coaches of a type similar to those cars. Nor was this activity in steel passenger car construction confined to America alone, for Mr. Yerkes in rebuilding and extending the subways of London found the same problem confronting him that the Interborough people had faced, and profiting by their experience, although desiring an entirely different type of car, placed with the American Car & Foundry Company during 1904 and 1905 orders covering a total of 258 cars.

It was also during 1905 that the New York Central, beginning its great work of terminal rebuilding and electrification, after careful investigation extending over a long period, settled upon the steel passenger coach as best meeting their conditions, and because of their previous experience in building this class of car the order was placed with the builders of the Interborough and Long Island cars.

The year 1906 found the tunnels under the Hudson at such a stage that the time was ripe for the placing of orders for equipment, and the Hudson companies entrusted the building of 40 cars for this service to the American Car & Foundry Company, who, during the same period, built several sample cars of various types for some of the leading railways of the country, including the Long Island, the Delaware, Lackawanna & Western, and the Chicago, Rock Island & Pacific.

In 1907 the Pennsylvania Railroad, after several years of careful investigation and study, both in the designing room and on the road, completed drawings at Altoona covering their standard P-70 coach, and an order for 90 cars was placed with the American Car & Foundry Company, who were the only car builders willing to undertake so large a contract on a fixed price basis. So well did the builders perform their part of the contract that the Pennsylvania steel passenger



Steel Car for the Long Island.

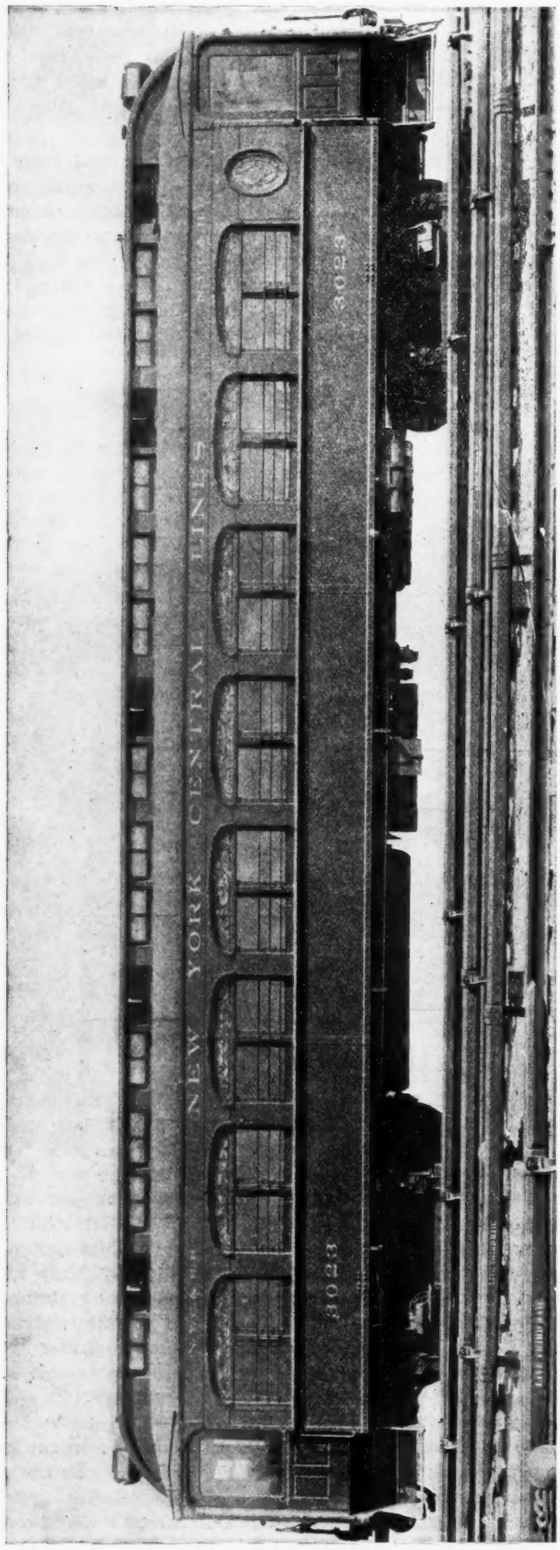
equipment is at all times under order in their shops, and some 120 cars for various classes of passenger service are now under construction.

The car building company has not, however, confined itself entirely to heavy types of passenger equipment, but during 1907 built some 40 steel trolley cars for the New York and Queens County Road for service in the streets of New York, and which, while constructed along somewhat conventional lines, are thoroughly strong and well built and weigh considerably less than wooden cars of similar design.

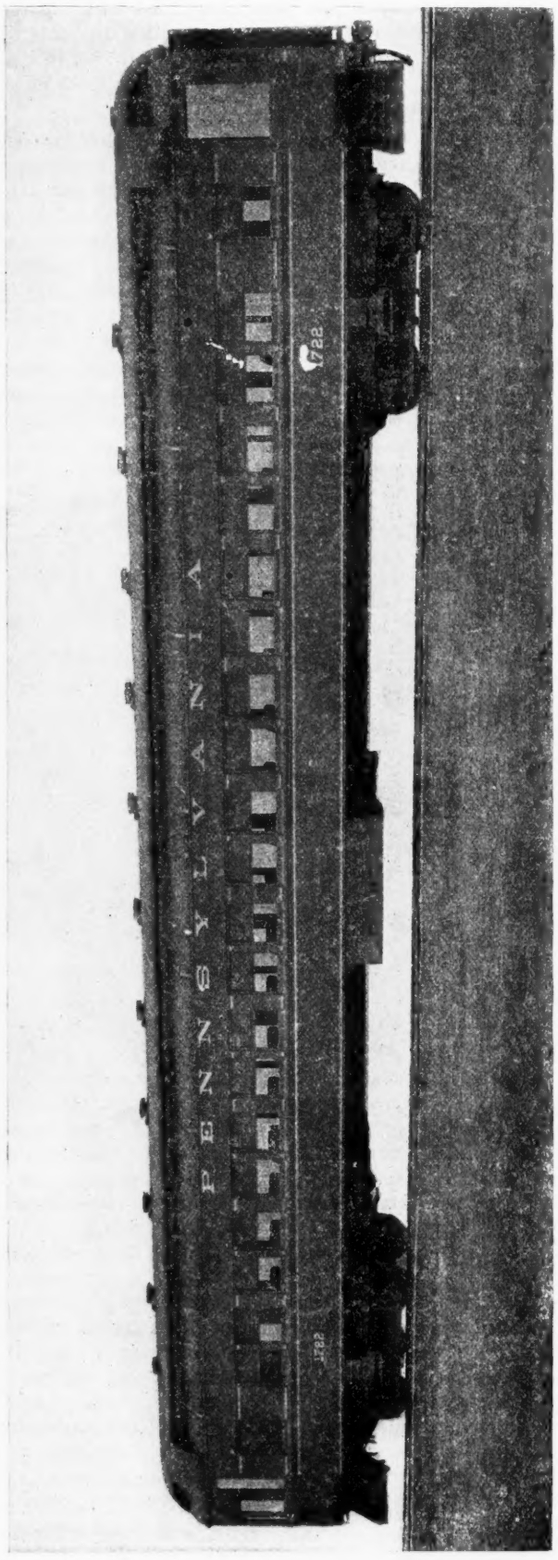
The year 1908 following so closely the panic of October, 1907, saw but little activity in car construction, still the building of 50 Long Island coaches along the lines of the Pennsylvania standard, which has been thoroughly tested, together with the completion of Pennsylvania cars and other orders received in the latter part of 1907, kept the builders busy.

Orders covering five steel postal cars for the Missouri Pacific; 40 coaches, 15 chair cars, six combined passenger and baggage cars, six combined baggage and mail cars, two postal cars and 30 baggage cars from the Rock Island Lines; 20 baggage cars from the New York Central; six combined baggage and mail cars, three combined passenger and mail cars, seven baggage cars, 12 passenger coaches, six dining cars and six chair cars from the St. Louis & San Francisco; 17 postal cars, 41 coaches, 15 passenger and baggage cars from the Pennsylvania, and 110 coaches from the Interborough Rapid Tran-

sit Co. referred to above, totaling 347 cars, show conclusively that the railroads of the country no longer believe the steel passenger coach an experiment. The placing of the orders above mentioned with the one company, the American Car & Foundry Company, does not by any means take the full capacity of their shops, for this company, which since the placing of the first Interborough order has built nearly 90 per cent. of all steel passenger equipment turned out by the various car builders of the country, has with a firm faith in the future made various additions to its passenger shops and kept its engineering forces busy on new designing, and their experience in this line of work gives them a distinct advantage over other companies who are still in the experimental stage.



Steel Car for the New York Central.



Steel Car for the Pennsylvania.

SILICA-GRAPHITE FOR PAINTING STEEL CARS.

There have been a multitude of discussions and recommendations as to the proper and improper method of protecting metal surfaces from corrosion, and especially in connection with the action of acid fumes and salt water. Almost any paint will protect for a time, but that time may be exceedingly short. There are, however, paints upon the market which, if properly inspected and renewed, can be depended upon to effectively protect metallic surfaces from corrosion.

That this may be done it is necessary that great care be taken in the selection of the pigments and the vehicle that is to carry them. All who have had anything to do with the painting of metallic surfaces know that a quick-drying paint is also apt to be rapid in its rate of deterioration, so care should be taken not to overload with dryers. The pigments should be inert, in that they will not form chemical combinations either with their own vehicle or with the external substances, such as acid, brine or fumes, with which they may come into contact. Finally the combination of the inert pigment and the vehicle should dry into an elastic, closely adherent film.

Of the materials used in painting, silica and graphite are among the best known. Both are absolutely inert and they are of such a character that they supplement each others' physical properties. The graphite is smooth, has great covering capacity and serves as a lubricant under the brush. But, if used alone, the coating will be too thin for long endurance. The silica, on the other hand, has a "tooth" and body which especially adapts it for mixing with other pigments, and it

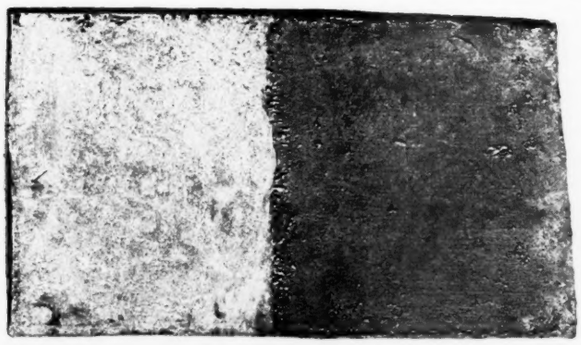


Plate Protected from Acid by Silica-Graphite Paint.

can be used to the extent of about one-third the total weight of the whole. It is a mixture of this kind that is used in Dixon's silica-graphite paint, made by the Joseph Dixon Crucible Co., Jersey City, N. J., with which some rather remarkable results have been obtained.

In the course of some rather severe laboratory tests that have been in progress for the past year it was found that these materials not only protected the metal to which they were applied but served as an efficient means of protecting the vehicle by which they were held.

Plates painted with this paint were submerged in a solution of 1 per cent. of sulphuric acid in water for nearly four months, and at the end of that time the film was found to be as intact and closely adherent as ever. There was no break in the surface of the paint and the only change visible to the eye was that of a loss of the original gloss. An examination of these surfaces with the microscope revealed the fact that the surface had undergone a decided change. The acid had attacked the vesicles of the vehicle and laid bare the particles of the pigment beneath, but there its work of deterioration had apparently stopped.

When the freshly painted surface was examined under an enlargement of 34 diameters, the particles of silica and graphite could be seen enveloped in the covering of dried oil. After submersion in the bath this oil seemed to be cut away and the whole surface appeared as though sprinkled with a fine silica and graphite sand, the individual grains of which were embedded and firmly held in the dry vehicle beneath. In this the shape of the particles could be clearly seen and the whole could be compared to a freshly painted and well sanded surface.

The silica had all of the appearance of a sharp sand, the grains of which were like clear quartz crystals about one two-thousandths of an inch across. It was evident that these grains of sand and graphite were serving as an effective protection to the paint itself. They were inert and the acid could not affect them.

In contrast to this another paint, subjected to the same conditions, but whose pigments did not have that inert resistance to chemical action possessed by the silica and graphite, was entirely disintegrated and dissolved and the metal left bare. As to the severity of the action to which these paints were subjected, the unpainted portion of the plate to which silica-graphite had been applied and which measured 4 in. by 3½ in. lost ⅞ oz. from the two sides exposed. This loss of metal may be taken as exemplifying the severity of the acid action to which the paint was subjected and, therefore, the paint's power of resistance.

It seems to be a property of acids to follow along beneath the coat of paint that has a break in it, so that a direct attack upon the metal at any point becomes possible. In this case but one-half the surface of the plate had been painted, and for the first two months there was an apparent tendency to lift the paint along the edge of the unpainted portion. But, at the end of this period, all further advance was checked by the closely adherent quality of the paint and there was no further visible deterioration. This condition is clearly shown by the accompanying illustration, which shows the surface of a plate one-half of which had been painted with silica-graphite paint and submerged in a 1 per cent. solution of sulphuric acid and water for three months and a half.

It is evident that a paint capable of withstanding such an attack as this would be especially valuable for use where the metal would otherwise be subjected to the direct action of gases and acid fumes, as in the case of overhead railway structures and roundhouse girders.

These laboratory tests covered not only tests with acids but with salt drippings as well, in order to determine its efficiency as a protective coating against the brine draining from refrigerator cars. In this plates painted with two and three coats of silica-graphite and other paints were subjected to a constant dripping of salt water, day and night, for nearly four months. Those portions of the plates that were unpainted were badly rusted and large flakes could be scraped off without difficulty. The painted portions were merely dulled in appearance and there was no visible rust.

These tests have been checked by the performance of cars in service that have been painted with this plant. Cars in the iron ore and coal trade that have been in constant service for from a year and a half to two years still have surfaces that are smooth and entirely free from injurious deterioration. The paint film remains intact and elastic and this is proven by the fact that it has not cracked or broken, even in cases where the parts and plates have been badly distorted by accident. From this it appears that when inert pigments are so combined with a vehicle that the resultant film is smooth and continuously elastic the paint so formed has a high resistance to the more active agencies of deterioration.

WESTINGHOUSE COMPANIES' EXHIBIT.

The Westinghouse Companies, including the Westinghouse Air Brake Co., Westinghouse Automatic Air and Steam Coupler Co., American Brake Co., Westinghouse Electric & Manufacturing Co., Westinghouse Machine Co., Cooper Hewitt Electric Co. and the Nernst Lamp Co., are effectively represented at the convention in the ball room at the entrance

and also in Machinery Hall. Both exhibits are connected, making the arrangement as a whole ideal, separating the necessarily noisy exhibit from the general reception space.

The exhibit of the Westinghouse Air Brake Company, Pittsburgh, Pa., includes a triple valve test rack; operative centrifugal dirt collector; sectioned 8½-in. cross-compound air compressor, connected in tandem with sectioned pump, rack demonstrating operation of K-2 triple valve; enameled main reservoirs; motor driven air compressor; hose protecting couplings; annealed steel hose clamps; demonstration of force required to separate hose couplings between cars as compared with standard hose couplings. The exhibit of the Westinghouse Automatic Air & Steam Coupler Company, St. Louis, Mo., includes sample of its automatic air and steam coupler. The exhibit of the American Brake Company, St. Louis, Mo., includes its automatic slack adjuster and flexible metallic joint for use between the engine and tender. The exhibit of the Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., includes a steam turbine train lighting set, 25-k.w. capacity, furnishing current to Westinghouse storage batteries, from which the current is later taken to light and operate the entire exhibit; arc lamps for shop and shed lighting; electric motors for stationary service; transformers; circuit breakers; electric current-measuring instruments; electric blowers and electric lamps, including carbon filament; metallized filament and tungsten lamps; electric mercury arc rectifier for changing from a.c. to d.c., for charge purposes. Electric motors of this company are used to operate the following machines: A planer in exhibit of the American Tool Works Company, Cincinnati, Ohio, is operated by a 15-h.p. motor; a radial drill in the space of the Cincinnati-Bickford Tool Company, Cincinnati, Ohio, is operated by a 20-h.p. Westinghouse motor; a shaper in the space of the Cincinnati Shaper Company, Cincinnati, Ohio, is operated by a 7½-h.p. motor; an 18-in. engine lathe in the exhibit of Lodge & Shipley Machine Tool Company, Cincinnati, Ohio, is driven by a 5-h.p. motor. Westinghouse recording wattmeters are used to record current consumption of all these machines. In addition to these, some 15 different applications of motors in exhibits of different machine tool manufacturers are shown.

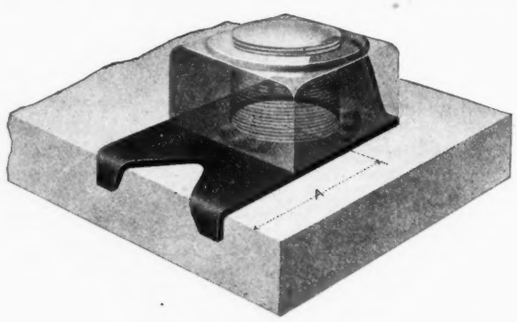
The exhibit of the Westinghouse Machine Company, Pittsburgh, Pa., includes a turbine train lighting set, 25-k.w. capacity, furnishing current to storage batteries from which current is taken to operate the lighting of the entire exhibit. The Cooper Hewitt Electric Company, New York, is exhibiting its type H, HH, B and K lamps for shop and shed lighting; type T lamp for office, station and lobby and general illuminating and decorating purposes. The exhibit of the Nernst Lamp Company, Pittsburgh, Pa., includes a line of its recent developments as well as an improvement in efficiency. Particular mention should be made of the system of fixture lighting with the screw border renewal. This enables the lamp to be renewed in the same manner as an incandescent lamp, by simply screwing the border into the socket. Another improvement, which has recently been placed on the market, is a new mineral heater, which gives the advantage of instantaneous light. The new spring holder for multiple lamps is also worthy of mention. It eliminates the use of tools and the adjustment of the glower, thus making it a much simpler proposition to maintain. As a whole, the display of Nernst's lamps shows railway men their utility for station, yard, shop and terminal lighting.

There has been an exhibition of car-couplers in Milan, at which more than 200 patterns, mostly models, were shown. The problem in Europe is complicated by the double buffer, and the necessity of providing some means of coupling the millions of the present stock of cars with the new ones.

NEW ARCH BAR NUT LOCK.

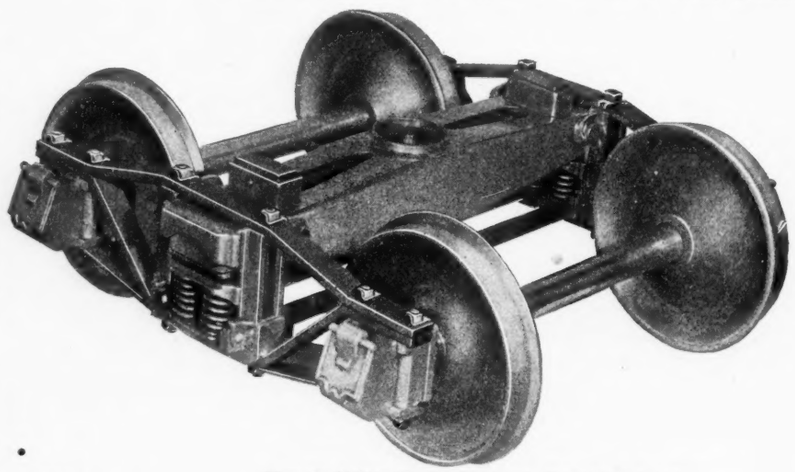
A simple fastener or nut lock for column and journal box bolts and nuts for arch bar trucks is now being marketed by the Flannery Bolt Co., Pittsburgh, Pa., manufacturer for the Keystone Nut Lock Manufacturing Co., 325 Frick building, Pittsburgh, Pa., and is exhibited at the Flannery company booth in the Annex, space 512.

This fastener is known as the F. B. C. arch bar nut lock. The special features which characterize the design are the corrugated or raised imprints surrounding the bolt hole; these



F. B. C. Arch Bar Nut Lock.

serve as a cushion for the seating of the nut, allowing for irregularities of nut or bolt head surface. They afford a means for adjusting the square of the nut to coincide with the locking lip in the direction of screwing on of nut, thereby holding the tension and not releasing such in the operation of squaring the nut with locking lip should the nut lip fail to coincide when screwed to place. When assembled the F. B. C. nut lock has no protruding metal other than its width equivalent to the square of nut which spans the arch bar; and the single locking lip lays flat to the nut face, giving a neat appearance.



Truck With F. B. C. Arch Bar Nut Locks.

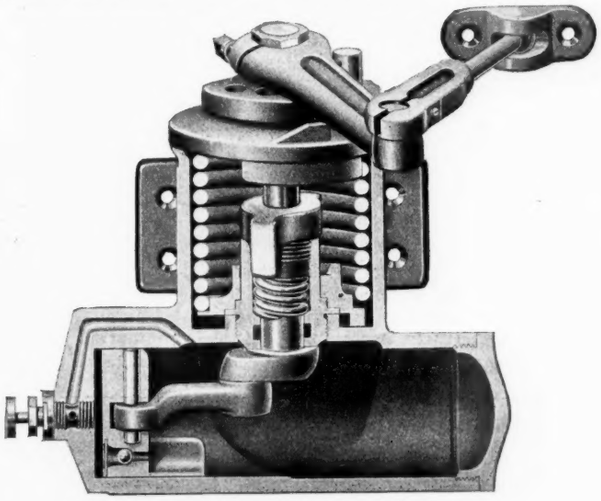
Continuous nut locks are also made, embodying the main feature for locking air cylinder bolts and bolts on striking plate and carrier irons.

Quite a demand has so far been made for the F. B. C. nut locks, and as an article for the purpose it has met with considerable favor. The Flannery Bolt Co. anticipates a growing demand and recommends the F. B. C. nut lock for new equipment and general repairs when its usefulness can be effective.

CAR DOOR CHECK.

Car door check No. 302, made by the Russell & Erwin Manufacturing Co., New York, has been in use more than fifteen years on the New York, New Haven & Hartford, and has also been adopted by the Boston & Maine. It is claimed to be the only successful air door check on the market needing no adjustment screw whatsoever.

It can be used on either right or left-hand door without in any way disturbing the mechanism of the check. All the working parts, except the plunger in the cylinder, are exposed, making it very easy, in case a part breaks, to locate the trouble immediately. Its extreme energy and closing power is at the latch point, where it has a pressure of over 15 or 16 lbs.



Russell & Erwin Door Check.

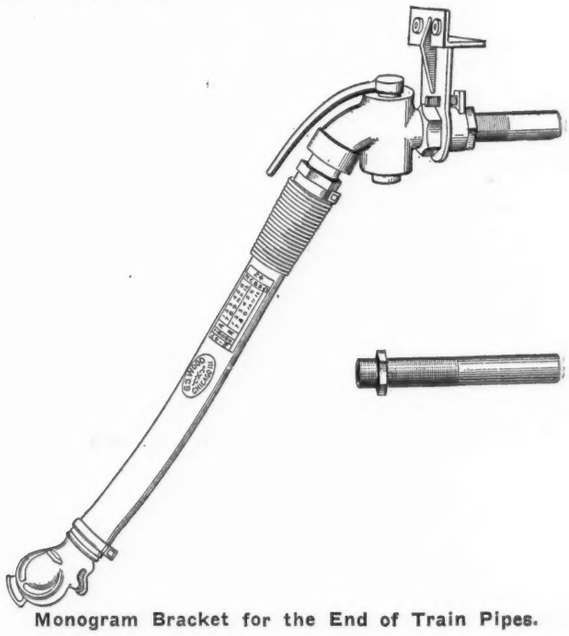
Other door checks for car doors are said to have a pressure at this point of only three to five pounds.

Another point is that when the door is opened and thrown one degree beyond a perfect right angle, the check adjusts itself immediately as a door holder, releases the tension on the spring and holds the door open, thereby doing away with the old-fashioned hook and staple, or the door holder adjuster which is put at the bottom of the door. A slight pull on the knob when the door is to be closed immediately starts the check in action again. The spring then becomes active and closes the door with a soft cushion action.

THE MONOGRAM BRACKET FOR THE END OF TRAIN PIPES.

The M. C. B. Association has established standards for the location of brakes, pipes, their application and maintenance, but in spite of the usual attachments for the pipe at the car end one of the most common defects in brake equipment is leaky train pipes, due to insecure fastening and to the shifting of the pipes when the cars are violently thrown together in the switching yards. The shifting of the main 1¼-in. pipe breaks and loosens the connections at the cross-over pipe, causing them to leak. The Monogram bracket here illustrated is designed to overcome these difficulties and practically makes the shifting of the pipe impossible. The bracket has ample strength and once applied it reduces the cost of maintenance to the minimum.

The hose angle cock is threaded into the end of the train pipe, which is held in the Monogram bracket located 13½ in. from the center line of the coupler and 13½ in. from the face line of the knuckle and when the angle cock is set at the required angle of 30 deg. the locking key in the bracket engages the hexagon on the angle cock, holding it in position. The lock nut is tightened with a wrench, holding the key in position locking as one solid piece of metal, namely the angle cock, bracket and train pipe, all parts in a positive position in a substantial manner, so that pipe shifting is positively prevented.



Monogram Bracket for the End of Train Pipes.

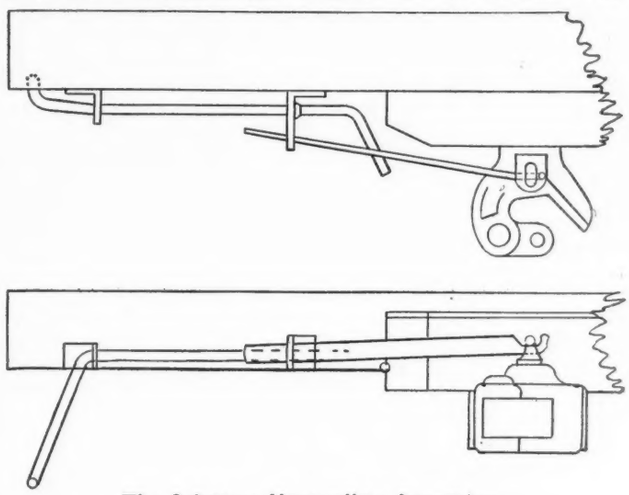
The improved brackets are furnished in five different patterns:

1. For a metal end sill, with web outside.
2. For metal end sill with flange outside.
3. For wood end sill.
4. For steam hose bracket on passenger cars.
5. For air and signal pipes on passenger cars.

These improved fixtures are supplied by Guilford S. Wood, Great Northern building, Chicago.

THE SCHROYER UNCOUPLING APPARATUS.

The uncoupling apparatus for freight cars which is here illustrated is the invention of Chas. A. Schroyer, Superintendent of the Car Department of the Chicago & North Western, and it has been already standardized on that road. The

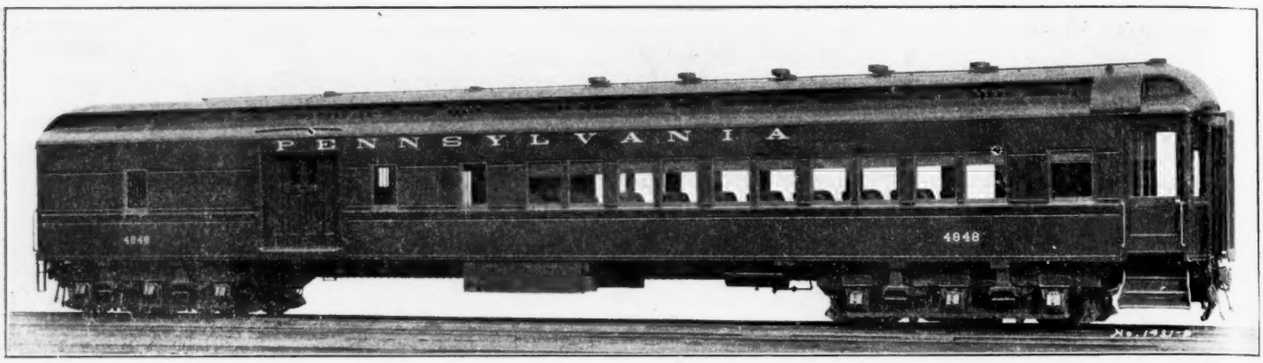


The Schroyer Uncoupling Apparatus.

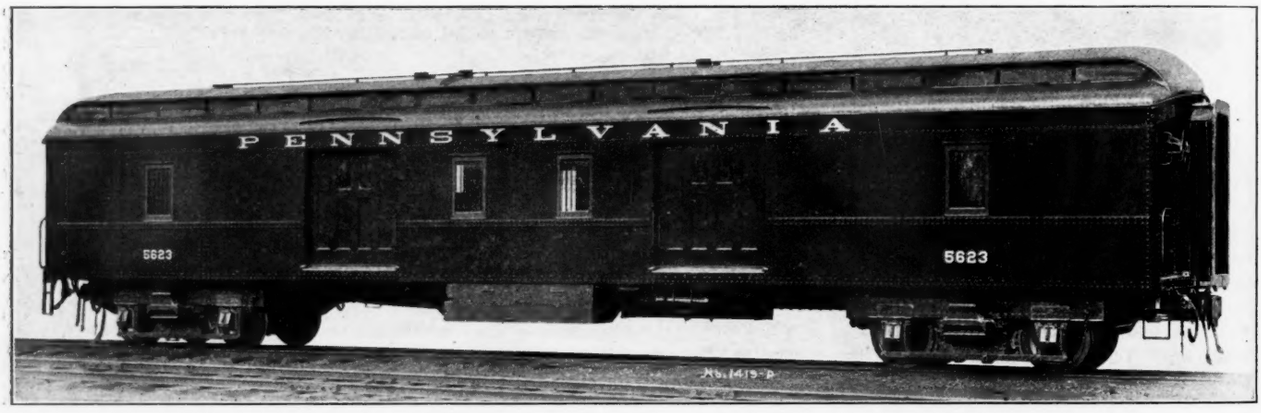
heavy fines which have been imposed upon the railways by reason of faulty lifting adjustments which connect the lock lifting pin of the coupler to the operating rod, are usually $100 in each case and some of the roads have suffered as many as 50 fines in a single month. This has become so burdensome that at the M. C. B. convention last year it was recommended

that the different roads apply a limited number of side and bottom unlocking couplers which were exhibited, and which are intended to do away with the lifting attachments. This would mean that practically new types of couplers, so far as locking features are concerned, would have to go through the experimental stages which would be required to bring the present type of the M. C. B. coupler to its high standard of efficiency.

The Schroyer device does away with the lifting attachments and enables the railways to continue the use of the present type of couplers without any chances of fines, as there are no lifting attachments (that is, clevises, links, etc.) employed. The improved fixture here illustrated is for sale by the National Railway Devices Company, 400 Old Colony Bldg., Chicago, and is on exhibition at booth 319, as are also some of the coupler exhibits.



All-Steel Passenger-Baggage Car; Pressed Steel Car Co.



All-Steel Baggage Car; Pressed Steel Car Co.

STEEL PASSENGER CARS.

While the all-steel coach has been a comparatively recent departure in car building development, rapid progress has been made along this line of railway construction until it has been made to apply to practically all classes of passenger train rolling stock. The experience derived by car manufacturers from steel freight car construction and the advanced use of metal in furniture, fittings, etc., have been favorable factors in promoting this development.

In addition to the regular all-steel passenger coaches manufactured for the Pennsylvania Railroad, the Pressed Steel Car Co., Pittsburgh, Pa., recently built for this road a number of all-steel baggage cars and all-steel combination passenger and baggage cars, which are shown in the accompanying illustrations. These cars have been constructed almost exclusively of steel, including the doors. The floors and headlinings are of fireproof material, and the very small percentage of inflammable material used is not a part of the structure but merely of the trimming. In the main structure of each combination coach there have been used 17,500 lbs. of ¼-in. plates, 4,500 lbs. of angles, and 7,100 lbs. of shapes and small plates. In addition, considerable steel material for interior finishing has been utilized. The flooring consists of monolith laid on corrugated sheets. A ¾-in. maple floor is placed upon the monolith in the baggage car and at the baggage end of the combination coach.

Six-wheel trucks were used on the combination cars and four-wheel trucks on the baggage coaches, both being equipped with 5 x 9-in. axles and 36-in. Carnegie-Schoen rolled steel wheels.

The general dimensions of the cars are as follows:

Combination Coach.

Length over all	77 ft.	8¾ in.
" over body corner posts	71 "	1 15/16 "
" inside, passenger end	39 "	9 11/16 "
" inside, baggage end	35 "	6 "
Width over side sheets	9 "	9¾ "
Height from rail to top of car	14 "	½ "

Baggage Car.

Length over all	64 ft.	3¾ in.
" over body corner posts	60 "	10⅜ "
" inside	60 "	9¾ "
Width over side sheets	9 "	9¾ "
Height from rail to top of car	14 "	½ "

KENNICOTT'S IDEA.

There is always a certain interest in watching the growth of a business. To trace the successive stages by which an idea, first dimly conceived in the brain of one man and then projected into the domain of material fact, steadily develops into a great industry that branches out all over the world—this is a fine and significant thing to observe.

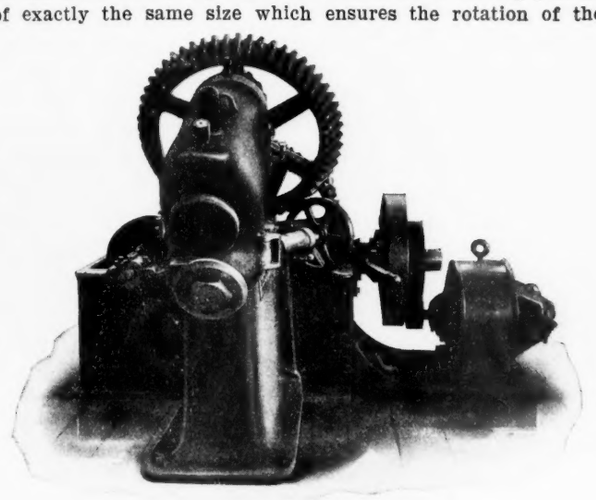
A case in point is the Kennicott Water Softener Company, Chicago. It was only ten years ago that to Cass L. Kennicott,

in the course of his work as a chemist, there came the germinal idea from which has been evolved the apparatus that bears his name. Since that time, the Kennicott water softener has been sold all over the world, and from China to Chilé the name of Kennicott has become synonymous with the words "soft water." Not only on the railways of the United States, but on the Government railways of Australia, the Imperial Chinese railways, the Natal railways of South Africa, on the railways of England and Germany, Italy and Spain, Austria, Russia and France—in fact, everywhere over the earth—this system of water purification has been installed. No better example of the compelling force of a valuable idea could be brought forward than this; and although it is only one of the hundreds that have made our railway system what it is, there is none which has more effectively solved its own problem.

THE LENNOX ROTARY BEVEL SHEAR.

The Lennox rotary bevel shear is designed for cutting steel from ⅛ to 1 in. thick on a bevel. This is done by two circular blades made from the highest grade tool steel carefully turned and milled which rotate in opposite directions holding and feeding the plate at the same time they cut it. These blades are double edged so that in case of damage to one cutting edge they may be readily reversed.

The makers have incorporated in this machine many new features, and it is now in widespread use in plate metal shops. One of these new features shown in the accompanying illustration is the parallel arrangement of the shafts. This has the advantage of properly distributing the strains of cutting, while on the other hand, it permits the use of small driving pinions of exactly the same size which ensures the rotation of the



Lennox Rotary Bevel Shear.

blades at precisely the same speed. This in turn ensures a clean, even cut without damage to either material or blades. The arrangement of the shafts referred to does away with the tendency to tear the plate and chip the blades and is largely responsible for the excellent work turned cut by the Lennox machine.

Another feature of this machine which commends itself to careful buyers, is that the upper blade is fastened to the shaft by means of a flush fastening thus doing away with the ordinary fastening nut and permitting the beveling of such special work as equal leg angles of all sizes, etc.

The Lennox rotary bevel shear will bevel any irregularly curved sheets. It will bevel in and out curves of a segment, angles and such difficult work as boiler heads after flanging, manhole saddles, dome sheets, etc. Its cutting speed need only be limited by the ability of the workmen to feed the work. For the general varying run of work of the ordinary boiler or tank shop, a cutting speed of not over 10 ft. per minute is recommended.

The machine will bevel curved work as well as straight, a class of work that cannot be done on a planer; and the average work can be done in less time than is required to clamp and adjust ordinary work in a planer. The machine is made in two sizes ranging in capacity from ¾ to 1 in. plate and weighing from 6,000 to 9,500 lbs. Each machine is carefully tested before leaving the factory and is fully guaranteed against all defects in workmanship and material for one year from date of sale.

Joseph T. Ryerson & Son, Chicago, are the exclusive selling agents.

CAST STEEL IN RAILWAY EQUIPMENT.

The development in the past year in the use of steel castings in car and locomotive construction, although not unprecedented, has made steady progress. Although some experiments are still being carried on with cast steel locomotive cylinders, none of the roads has adopted them or progressed far enough to determine the advisability of adoption.

Vanadium is being used to a limited extent in the manufacture of locomotive frames, but is even yet in the experimental stage.

It may be said that, in general, where strength is the chief requirement, steel castings are replacing gray iron and malleable iron castings in both locomotive and car construction.

For a few years semi-steel has gained favor for journal boxes; yet there are some roads which are willing to further conserve the life of their equipment and are favoring cast steel journal boxes for freight cars. This is more noticeable, perhaps, in the use of the cast steel boxes cast integral with the truck frames.

Cast steel draft sills are being used by some roads on account of the increased strength in such arrangement, and the protection afforded to the car body. The cast steel bolsters are more popular than ever—rarely is an argument attempted against their use; their economy has been demonstrated.

A new field is being gradually opened up for steel castings in steel passenger cars. The designers of such equipment and the foundrymen should, however, consult on the question of the design of the steel castings for such purposes. As at present designed, these steel castings are very intricate and difficult; sections of metal are altogether too light and the foundryman faces a big loss in the production of such castings by the open hearth process.

If the railways are willing to pay more than double the price per pound for steel castings for passenger car work than for freight car work, there will be no difficulty, for the work can be produced by the crucible process. But such castings contain a higher percentage of carbon than is necessary for such class of work. The only solution is co-operation by designers, car builders and foundrymen. The steel maker has made a specialty of his line of work and is progressing daily. It cannot be expected that the layman is as replete with experience; he should seek information from the expert.

There is still the question of basic and acid steel open for discussion. For many classes of castings the one is as good as the other. There is no question, however, that for bolsters and truck frames the basic open hearth steel is the only satisfactory steel to use. The acid steel is not reliable to withstand the repeated severe shocks to which bolsters and truck frames, made in green sand, are subjected.

Experience in making this work also counts as in other lines of business where expert knowledge and experience add to the value of the product.

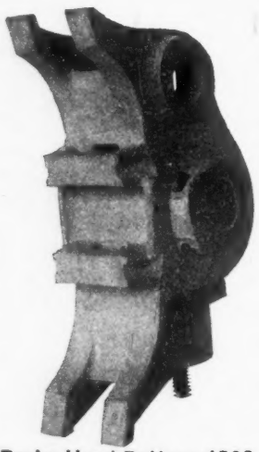
Benj. Atha & Co. (succeeded by the Atha Steel Casting Co.),

Newark, N. J., without doubt was the first foundry to make green sand castings extensively, starting this work on electric railway motor frames, when the industry was in its infancy, progressing and growing gradually into the bolster business. It first made bolsters some ten years ago, and those particular bolsters are still in service. By substituting green sand for dry sand cores, and thoroughly annealing all bolsters, the liability of shrinkage cracks has been eliminated.

The Atha Steel Casting Co. claims that the percentage of failures of bolsters of its design and manufacture is less than any other bolster maker. With this exceptional record, it can rightly claim to make the best bolsters.

AUTOMATICALLY ADJUSTABLE BRAKE HEAD.

The new automatically adjustable brake head, pattern 1538, of the Chicago Railway Equipment Co., Chicago, which is standard on Pullman cars, is being shown in exhibit spaces 546 to 551, together with other new designs. It is the latest development of this brake head, representing many years of experience and careful study. It embodies all the good features of the old adjustable designs, both those adjusted by hand and those adjusting automatically, that were susceptible of improvement. The principal features of improvement are increased hanger area, reinforced center and broadened shoe bearing lugs, and increased area of sleeve bearing surface; while the features of spring block bearing surface, changed position of spring box, and machine fit between sleeve and head are maintained. The 1538 head will interchange with the old 138 head, and the improvements increasing the general efficiency of this type of head can be had, of course, with heads arranged for hangings different from the single-link Pullman type.



Brake Head Pattern 1538.

The original automatically adjustable head of this company was developed to supplant the old clamp design and has been in successful service for years. In the present pattern this design is not only brought up to date, but future requirements are anticipated.

THE FISHER-BROOKS BENCH VISE.

For nearly 70 years Fisher & Norris, Trenton, N. J., have manufactured the Fisher parallel leg vise along with their Eagle anvils. This is one of the strongest and most durable vises on the market and is appreciated more to-day than ever for blacksmiths and heavy machine shop use. Realizing the demand for a light, cheaper vise for bench work and portable use, noticing at the same time that the tendency seemed to be rather toward making these vises as cheap as possible instead of as good and durable as possible, the firm decided to put their attention on manufacturing the best and strongest vise at as reasonable a price as possible, consistent with quality. It has the machinery and processes suitable for turning out a good, first class tool, backed by the reputation of the firm.

The body of the Fisher-Brooks bench vise is made of a special mixture of cast iron, the same as is used in the Eagle anvil, and anyone who knows the amount of the pounding and continual use these anvils will resist can appreciate the strength and durability of this iron. This permits of a lighter vise, but with the greater strength than makes that are heavy and clumsy in the large sizes.

The jaws are faced with cast tool steel, file cut by hand, and properly tempered. This facing is not screwed on or fitted in slots, but welded to the jaw by the Fisher patent process; being a permanent fixture. The Fisher-Brooks vise can be called the solid nut vise, for it is this feature wherein it is unique.

The hardest worked part of any bench vise is the screw nut. The past practice has been to insert a malleable iron nut which often gets lose and is sure to wear out in a very short time, necessitating laying up the vise for repairs, and the chances are that when a new nut arrives it will not fit properly.

The nut in the Fisher-Brooks vise is cast solid or integral with the back jaw, drilled and tapped in there. This insures a rigid job and the screw will positively run parallel with the thread.

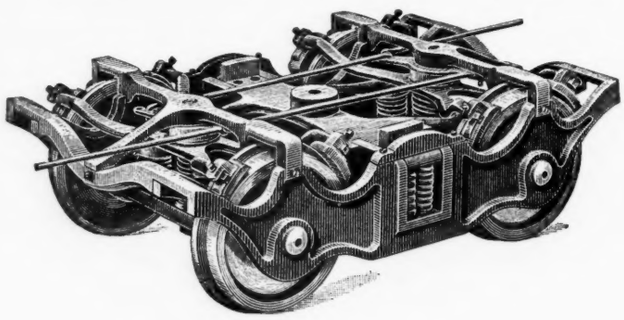
To meet the argument that, should the nut wear out, it is not renewable, attention is directed to the Fisher double screw parallel leg vise, in which the thread is cut in the solid back jaw. Many of these vises are known to have done service for 30 or 40 years, and the material is so strong and lasting that not one case is on record where the thread has given out. Fisher & Norris claim that when the nut in this new vise is worn out, the entire vise will be in the same condition and ready for the scrap heap.

These vises are made in various popular sizes, in plain and swivel base. A full line will be displayed at the convention exhibit.

THE ROUY PATENTED TRUCK.

The Rouy truck, including the braking arrangement, is covered by patents dated February 26, 1901; July 12, 1904, and December 22, 1908. This truck and braking arrangement was designed to increase the security and safety of travelers and minimize the dangers of wrecks and collisions.

The particular feature of this truck is in the wheel and axle design. The wheels are independent of the axles, running on roller bearings. It is claimed that the substitution of these independent wheels for the rigid wheels and axle will effect a considerable saving in power necessary for starting and accelerating a train, in locomotive fuel consumption and in journal box lubrication.



Rouy Patented Truck.

The necessary slipping of one of the two wheels, in turning a curve, when both are rigidly connected to the axle, is overcome by the independent wheels.

Another particular feature is in the location of the brake shoes. Reference to the illustration shows that each wheel has two shoes, and that they are placed near the top, equidistant from the vertical center line. This affords three points of contact in braking, two under the shoes and a third at the rail. As the wheels are independent of the axle, full braking power is exerted on the wheel.

No force is necessary to oppose the revolving axle, as is the case when it is rigidly connected to the wheels.

The patents for this truck and braking arrangement are held by G. Rouy, the inventor, 2077 Eighth avenue, New York.